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AUGUST 26, 1950

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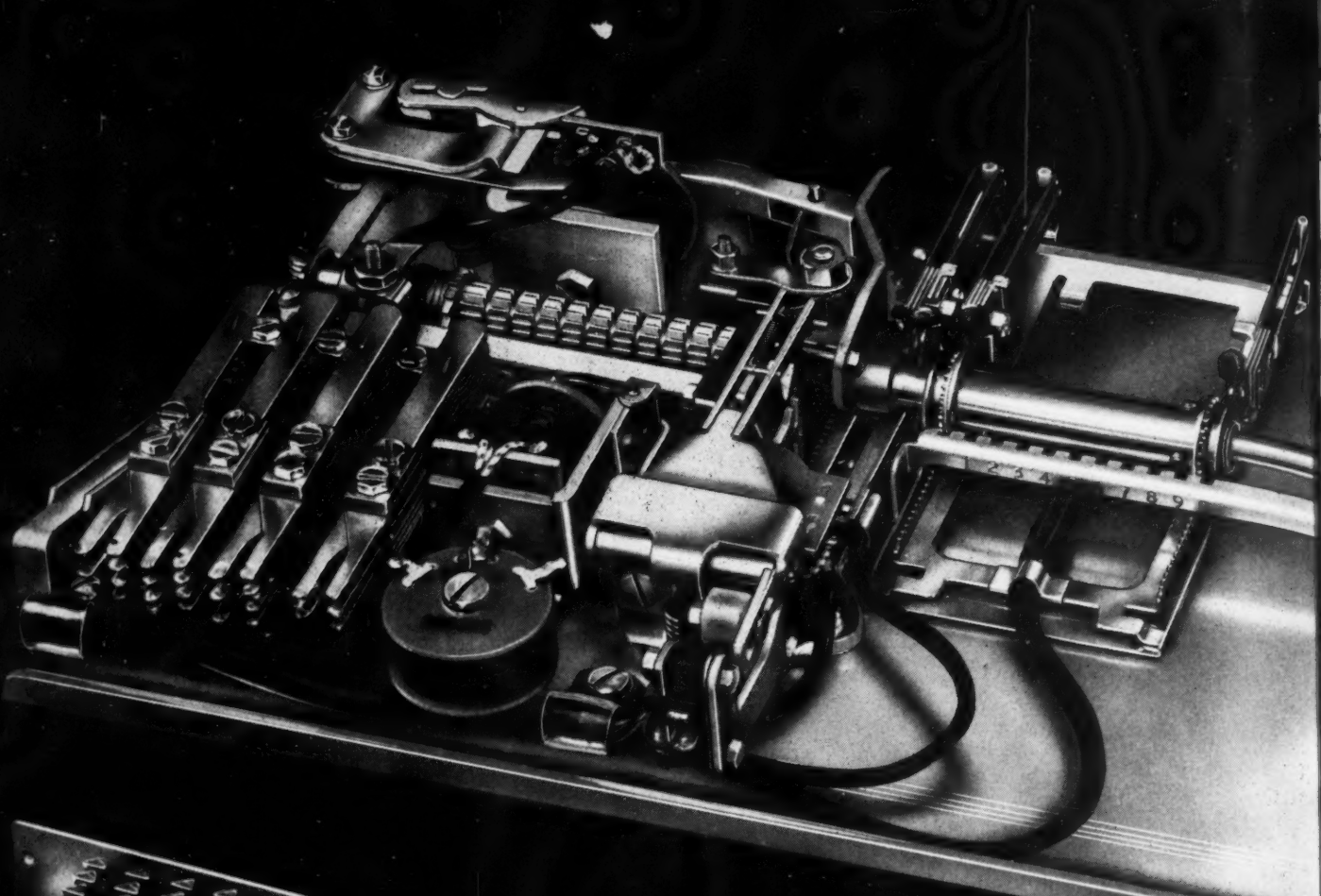

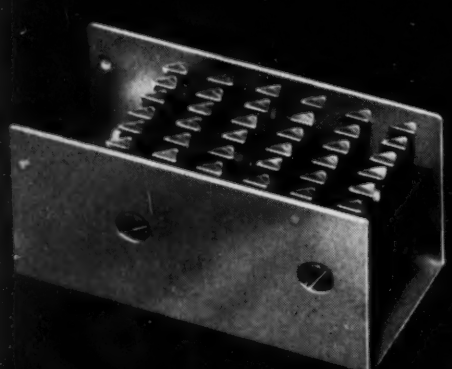

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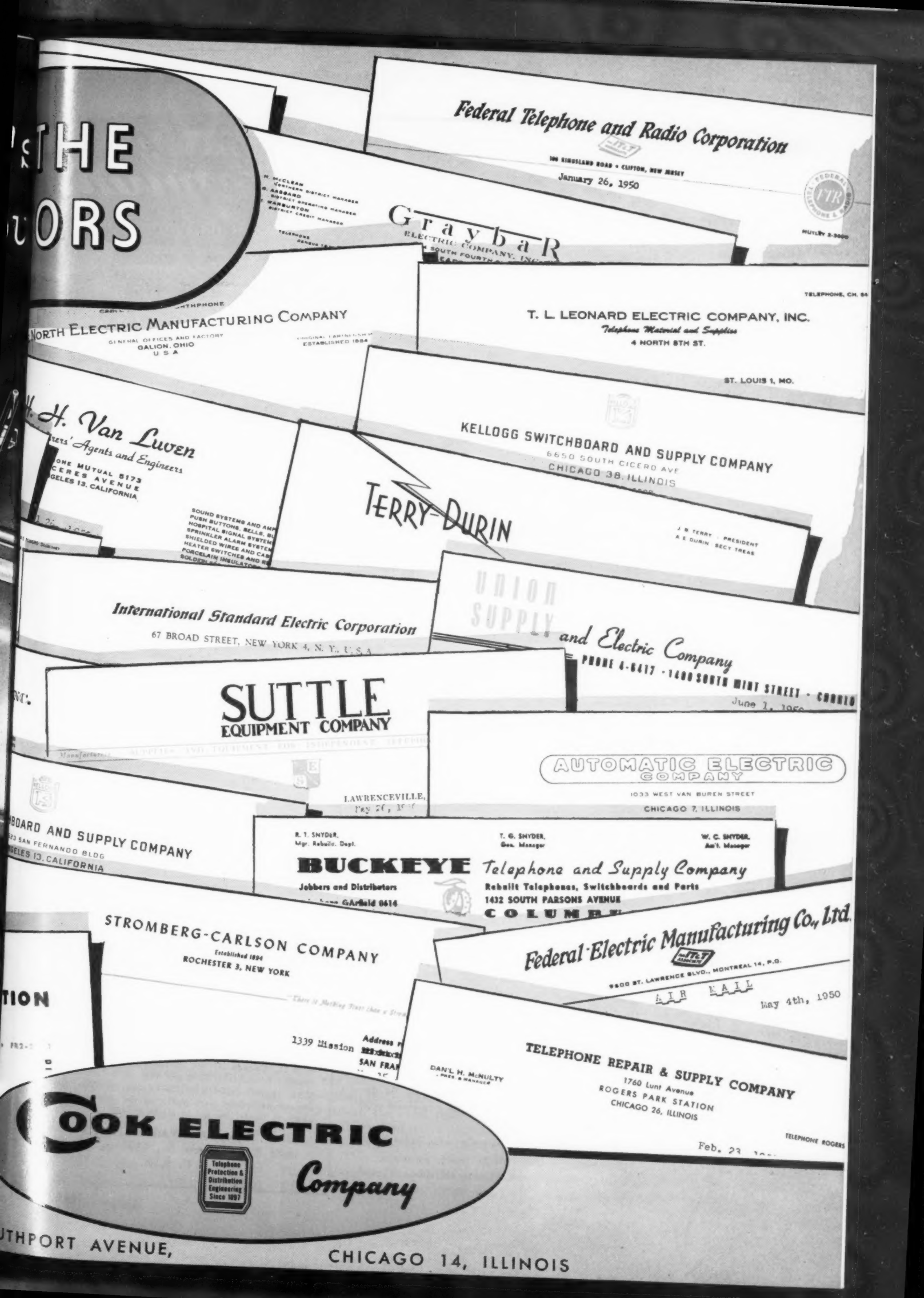
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FLASHES AND PLUGS

JUST MONKEY-ING AROUND. It sounded like monkey business when a telephone call came in on an emergency number in Los Angeles.

The operator could hear sounds of a violent struggle but no one answered her frantic questions.

A supervisor traced the call and gave police the address. A squad car raced out. Officers slit the back screen door and entered.

Sure enough, it was monkey business. A pet monkey, left alone, had snarled its leash with the telephone cord and was banging the telephone indignantly against the wall.

How did he dial the emergency number? He ain't sayin'.

• • •

KISSES WITH A RING IN THEM. Doorbells rang in 12 apartments in Perth Amboy, N. J., at an early hour one morning recently. One excited resident telephoned police.

The squad car roared to the door, siren screaming.

In the lobby police found a young man kissing his sweetheart good night, her back against the bell buttons.

• • •

THE ORIGINAL "EAGER BEAVERS." The commanding officer of the 13th Armored Reserve Division at Camp Cooke, Calif., got a call from Los Angeles, 125 miles away.

"Listen," said the voice, "I want to join up right away."

"But," began the general.

"I can leave for Korea in 48 hours," the voice persisted. "I've got two buddies here who'll enlist with me. Wait—make it three. The bartender's going to close up and join too."

The caller was referred to the recruiting service.

• • •

"WOW!" IS APPROPRIATE. A motorist in Santa Monica, Calif., reporting theft of accessories from his car, started to give his name.

"What?" exclaimed the officer.

"My name is Wojtkiewiez S. Wojciechowicz. But just call me Bow Wow. Everybody else does."

• • •

PANGS OF LONELINESS. A Boston, Mass., store proprietor said he was a lonesome man with his wife away on vacation and made 537 extra calls on his telephone bill, just calling friends and relatives to relieve the monotony. The licensing board thought otherwise, however, after a police sergeant testified the bill for the calls was found on the person of a horse race bookie who was using the telephone for placing bets.

• • •

A LIE IN THE WRONG VEIN. A Philadelphia, Pa., resident telephoned a coal dealer and asked that a ton of pea coal be delivered to his home. The dealer said he was all out of pea-sized coal and would a ton of chestnut do just as well.

The customer asked why the pea coal supply was exhausted.

"The pea coal vein ran out," said the dealer.

The customer—a former coal miner who knew all sizes of coal come from the same vein—hung up.

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August 26, 1950

Contents

IN THE NATION'S CAPITAL 13
By Francis X. Welch

CABLE SPLICING—Part XVI 17
By Daniel Seitz

TIMER AND AUTOMATIC RURAL CUT-OFF 21
By C. H. Daubendiek

COURTS AND COMMISSIONS 23

IMPROVE EMPLOYE RELATIONS WITH SERVICE EMBLEMS 27
By D. F. Davison

THE "UNBEATABLE PARTNERSHIP" 28
By Harold Charles

PLANT MAN'S NOTEBOOK 32
By Ray Blain

PLANT MAN'S QUIZ 34

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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH
WASHINGTON EDITOR

FCC, FPC and other regulatory commissions called to White House for industrial mobilization conference. Proposed tax bill discussed. Texas company proposes subscriber-financing with preferred stock.

Regulatory Roles in Mobilization

LAST week, representatives of the Federal Communications Commission (FCC) along with those of the Federal Power Commission (FPC) and other regulatory commissions were called to a special meeting at the White House offices. The ostensible purpose of this meeting was to brief the various commissions on the respective parts they are expected to play in the forthcoming period of industrial mobilization.

The very nature of this meeting, obviously, precludes any first hand or even indirect report of what the different commissions were told to do. But it is only reasonable to suppose that the "briefing" varied widely. A commission such as the Securities & Exchange Commission, principally concerned with regulating the stock markets, security regulations and gas and electric utility holding companies, could hardly be getting much more than "marching orders" to leave the Nation's Capital, if and when the military need more office space and other facilities.

But the FCC and FPC are quite likely to be reserved for some special mobilization chores in connection with operating public utilities. So far, neither the FCC or FPC has figured very prominently in recent news about the battle between the old line bureaus (Commerce, Interior, Labor, etc.), as to which will exercise wartime controls over the nation's vital utility industries, when that becomes necessary. This does not mean that the FCC, however, with its intimate knowledge and considerable information about the communications industries, will not be called upon to perform some special control functions, during any such emergency.

Best bet is that the FCC and its staff will provide a nucleus of technical experts, to supervise the operation of radio, telephone, telegraph, etc., along special lines. If this seems a bit vague, let us face it—it is because your correspondent just doesn't know anything about it, and so far—has not been able to learn. Yet, we can recall that the old Board of War Communication of World War II was hatched out of the FCC, in large part. FCC has already indicated that it is working on organization of radio amateurs and others for an "emergency network" of communications, in case of a "disaster" affecting regular radio, telephone, telegraph and other communication services.

As for issuing priority orders, and controlling inventories and similar tasks which were performed by the old War Production Board's Communication Division during World War II, there is nothing to indicate that the FCC would step into any such role. For one thing, it would be so foreign to its ordinary function of regulation as to be even in possible conflict with such duties. The same commission which fixes rates, or supervises the adequacy of service, could hardly have an objective approach to the problem of how much material or equipment a telephone company should be permitted to have on hand during a shortage.

But after such policy decisions are made elsewhere, it is barely possible that the FCC could be used as a sort of "processing agency" to keep track of the paper work. This writer is inclined to think otherwise, however.

As far as the telephone industry is concerned, the commerce department shapes up as the most likely spot for any new Korean wartime equivalent of the old Communications Division to emerge. This assumes that the administration will continue with its announced program of using the "old line" departments to exercise wartime controls over industry. If it develops, later on, that special war control bureaus (such as the old WPB and OPA) are necessary, it will be easier to shift these industrial control units to the new central control bureau than to start them out "from scratch" at this time. Such is the theory of the administration's present planning, at any rate. Whether it will all work out that way, or whether it will work at all, is something very much likely to be discussed in the future.

Jumping the gun, perhaps, on the Defense Production Act, which Congress is expected to pass sometime before Labor Day, blueprint divisions are already turning up. Something like the old WPB is shaping up entirely within the Department of Commerce. The White House is said to have seen the plans and approved.

Thus, even while Congress continued to debate the controls bill, commerce is going about the job of setting up priority and allocation machinery for a wartime economy. Ex-WPB officials are reported to be all ready to go to work with the commerce department.

How will the controls over industry get started? An inventory freeze, for all industry, will probably be the first step in the National Security Resources Board (NSRB) mobilization "timetable." This would follow the imposition of "voluntary" controls, especially on specific critical materials such as steel. A plan for freezing inventories is being held "on the shelf" at NSRB until M-Day (which is the theoretical day for full industrial mobilization). Thereafter, retroactive ceilings on inventories would be imposed.

The New Defense Production Act

The House-approved wartime control bill, being debated by the Senate this week, will probably give the President broad discretionary "stand-by" powers: (1) Over price and wage "stabilization;" (2) to set up a system of priorities, allocations, and rationing—on a voluntary, selective or general basis. Utility rates, already regulated by the state commissions, will be ex-

empt from any federal price controls (just as they were exempt during World War II).

The Senate was hanging back on delivering all of the powers, delegated to the President in the House version of the bill. Some senators still have their doubts as to the degree of war controls needed for military operations. Business leaders are pointing out that present and anticipated military demands during the next 12 months, cannot absorb more than 10 per cent of the national output, in goods and services. There is some sentiment in the Senate to restrict the exercise of the emergency controls, until this military demand reaches the scale of 20 or 25 per cent.

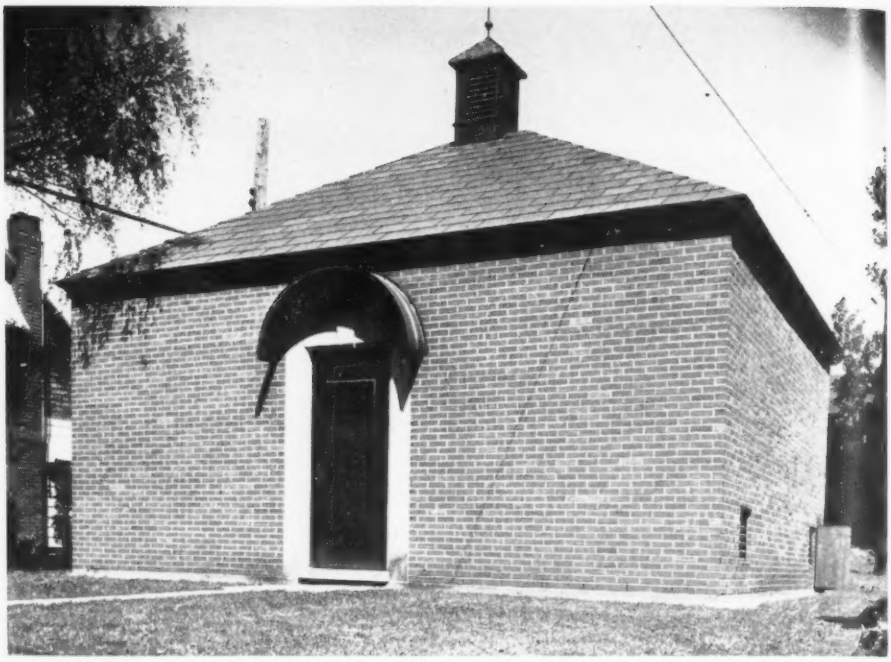
On the other hand, there is the feeling that future foreign aggressions (in areas other than Korea) may catch us unprepared if stand-by control legislation is not "on the books." Lack of confidence in any consistent policy on the part of the executive branch is shown in the large number of restrictive amendments proposed. The agitation to attach the Mundt Bill to restrict Communist activity was a sample of this.

Whatever is finally passed, the President will move slowly in exercising powers granted. This comes from a reliable Senate source, who seems certain the White House will try to keep controls on a voluntary basis, especially with respect to allocation of strategic materials and services, such as steel, copper, rubber, aluminum, coal, oil, natural gas, and electric power. Wage-price controls, if authorized in the final bill, will be avoided until after elections, and may not be exercised at all, unless we become militarily involved in areas other than Korea.

Higher Taxes Coming

Sometime around the end of this month (August) we can expect Congress to pass the "interim" tax bill to boost personal and corporate income taxes. This is the same bill which started out in the House last spring to *reduce* excise taxes on telephone bills and toll calls. But that, of course, is all out the window. Right now, it appears that the final bill *increasing* taxes will be just about the way the Senate Finance Committee voted it out last week. For that reason, a closer look at the new bill is well worth the attention by all telephone industry people.

The Senate Finance Committee last week unanimously approved a revised 1950 revenue bill designed to give President Truman the first installment of an additional $5,000,000,000-a-year revenue for the Korean crisis and national defense.



New exchange building housing new automatic central office equipment at the Petrolia, Pa., exchange of the Peoples Telephone Corp., Butler, Pa. The building is of fireproof construction of brick, tile and steel. The Petrolia exchange serves more than 400 subscribers and now can be enlarged to 800 lines.

It boosts, on specific request by the President, individual income taxes by $3,000,000,000; corporation taxes by about $1,500,000,000, and closes tax loopholes estimated to produce some $500,000,000 a year or more.

Detailed estimates on the expected productivity of the new legislation were to be embodied in a formal report to be submitted to the Senate this week, according to Senate Finance Committee Chairman George (D., Ga.). For the current fiscal year ending June 30, 1951, the measure is expected to boost revenues by about $3,000,000,000. Higher withholding taxes for individuals—raised from 15 per cent to 18 per cent—will go into effect for all pay days beginning on and after Oct. 1.

Inasmuch as the legislation is a complete revision of a House-approved bill, the measure will have to go back to that body for approval after the Senate acts.

The bill includes a speedup plan for the payment of corporation income taxes, a provision designed first by Representative Mills (D., Ark.), a member of the House Ways and Means Committee.

Among final actions of the finance committee, before voting out the bill, was adoption of a provision setting an 87 per cent ceiling on the amount of an individual's income the government could take for taxes.

The present ceiling is 77 per cent. The administration had urged a 90 per cent ceiling. Individual income taxes were boosted by the simple device of repealing the tax cuts of 1945 and 1948. The changes will be reflected in the individual income tax blanks on which personal incomes are computed.

Corporation rates were boosted from the present 38 per cent to a 45 per cent rate. The committee did not adopt an excess profits tax for corporations as in the 1942 revenue act, but ordered the matter studied by the staff for possible action in the next Congress. The bill provides full exemption from taxation on the service pay of enlisted men fighting in Korea and substantial tax reductions for officers.

Meantime, the Congressional staff of experts has been directed to make *new* tax studies for possible legislation in the *next* Congress. President Truman has warned that the higher levies provided in the "interim" tax legislation are only a start toward the expanded revenues which will be needed to keep the country's fiscal house in order during the emergency.

CORRECTION

An error was inadvertently made in reporting the REA rural telephone loan allocated to the Hancock Rural Telephone Corp., Greenfield, Ind., on page 14 of the Aug. 19 issue of TELEPHONY. Instead of $164,000, as we reported, the amount of the loan allocation is $184,000.

In addition to ordering study of an excess profits tax for companies, the finance committee suggested to the staff that it also study where some form of excess profits taxation on individuals is feasible.

They also asked that a suggested "transactions" tax be explored, along with the implications and possibilities of a general federal sales tax. All excise tax reductions which were voted in the house bill were stricken from the senate version before approval.

Excess Profits Tax

Despite the efforts of Senator O'Mahoney (D., Wyo.) the "interim" tax bill will contain no excess profits tax. For that small relief, the public utilities can be thankful. But excess profits taxes, of some sort, are very much in the picture for the coming year of 1952. Even though such legislation might require action from the next Congress (especially if there is a heavy "turnover" at the elections next November), the Senate Finance Committee is planning to hold sessions on the excess profits tax during the months of November and December.

Public utilities are bound to get the heavy end of the burden in any excess profits tax. This is one reason why telephone, gas, and electric officials already are at work trying to plan some measures which will avert unfair discrimination against the utilities.

In any event, the wartime burden of federal taxation is likely to be much heavier for utility companies in relation to gross revenues than for other industries. In 1945, the telephone and telegraph companies had to pay out nearly 11 per cent of their revenue dollar in federal taxes on income, the electric and gas utilities 8.6 per cent, and the natural gas pipelines 8 per cent. The only industry with a similarly high load was the printing and publishing business. The mining, oil, coal, construction, and merchandising industries, along with food and tobacco, got off relatively light.

This is a good reason for the revamping of federal tax policies toward the regulated industries, which operate under fixed prices in wartime and cannot "profiteer" — while many other industries can raise prices and increase profits in line with the general inflationary trend. Utilities not only make a narrow margin of profit on their additional sales attributable to increased defense activity, but must bear the burden of higher costs for fuel and equipment and supplies, as well as wage demands to offset the higher cost of living. Theoretically, they can obtain offsetting rate increases, but these are sure to prove slow, if not inadequate.

The phenomenal increase in living standards brought about by the competitive enterprise system without rigid government planning and controls is effectively illustrated by the remarkable development of the automobile in America. Here, in simple terms, is the story, taken from *Automobile Facts:*

"A review of the 12 present makes of U. S. passenger cars whose ancestors were on the road in 1920 shows that, on the average—

"Their price has dropped from $2,760 for four-door models, to $1,895.

"Their horsepower has risen from less than 49 to over 103.

"They weigh 3,309 pounds today, or 300 more than in 1920.

"Their over-all length has increased from about 14 to about 17 ft.

"In terms of the average U. S. industrial wage, it takes only 34½ weeks to earn the price of today's cars, where it took 92½ weeks back in 1920.

"While the over-all width of cars has increased only about five inches since 1920, seats are over a foot wider and in some cases even more, because the body has been widened into the space formerly used only by fenders.

"And where the car built in 1920 had a life of about 25,000 miles, the average car built today will travel more than four times that distance before it's finally scrapped.

"Even the most expensive cars of 1920 — those selling at over $5,000 — had less horsepower than the lowest priced cars on today's list, and lacked hundreds of refinements that are standard on today's models."

As already noted, the utility industries have formed their lines on special tax proposals. There has also been formed a special tax committee of the National Association of Railroad & Utilities Commissioners to "study the effect of any proposed tax legislation and any other defense legislation which may affect the companies subject to commission regulation." The state commission members include: Craemer (Calif., chairman), Loughlin (Conn.), Fisher (Ill.), Martin (La.), Morgal (Pa.), Clarke (Wash.), and Anderson (W. Va.).

Subscriber-Financing With Preferred Stock

Something new under the sun, so far as the writer can ascertain, was seen in a recently perfected plan of a Texas Independent telephone company to enlist prospective subscriber support, in connection with an application for an REA loan. It is an interesting plan in several ways. But the unique feature seems to be the proposal to issue *preferred* stock to prospective subscribers.

Here are the main contract provisions which this enterprising Texas company suggests to the customers, in return for the installation of improved rural service:

(1) *Installation Charge.* The customer agrees to pay $25. Five dollars with the application and the balance when construction begins (to extend service) not later than six months.

(2) *Preferred Stock Purchase.* Each subscriber agrees to buy one share of preferred stock (par value $50) paying a dividend from 2 to 4 per cent. This can be paid for at the rate of $5.00 a month, with 6 per cent interest on unpaid balance—all stock subject to call (redemption) at the option of the company.

(3) *Continuity of Service.* The subscriber agrees to take service "so long as cost of extending service to all applicants, entering into this contract, has not been recovered by the company." If he quits before that time, his share of stock can be cancelled as "liquidated damages" for not keeping his agreement. But if he sells out, or rents his place of residence, he can get a release from this obligation by substituting his successor.

(4) *Rates.* The proposed rates range from $2.75 a month for multi-party line service (selective ringing) for four to eight parties; $3.50 for four-party line (selective ringing) and $6.50 for straight line where available. Rural business rates suggested were $5.50 for rural party line and $8.50 for straight line. All such rates would be subject to REA and regulatory approval, as well as to subsequent adjustment required to protect a lawful and reasonable return for the company.

As noted above, it is unusual for an REA telephone loan prospect to propose subscriber contribution financing through the issuance of preferred stock. But it could be done in this case, because the company has no bonded indebtedness and consequently no indenture for the record.

V V

» "Miss Time," Stockholm's automatic time-information service, registered a record number of calls—1.8 million—during 1948, while her sister "Miss Weather" answered 1.3 million inquiries. As the total number of telephones in Sweden is 1,510,000, nearly every fourth Swede has a telephone. In Stockholm, the capital, the population of which is now about 700,000, the total number of telephones is over 407,000, or a little more than half a telephone per citizen.

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CABLE SPLICING

By DANIEL SEITZ
Cable Superintendent
York (Pa.) Telephone & Telegraph Co.

IN THIS article, we shall explain the Varley loop method in detail and how it is used for locating various types of cable faults. It is not always possible to find a clear wire in the same cable with the faulty wire. In such cases, a wire of any gauge or length in another cable, a wire of an open wire line or an insulated wire run on poles, if the fault is in aerial cable, may be used as the clear wire.

Referring to the formula used in *Fig. 4*, we find the fault location given in feet from the bridge, whereas, in *Fig. 3* of Part XVI, appearing on page 18 of the Aug. 12 issue, the formula gives the distance in feet from the distant end of the cable back to the fault. The method and formula illustrated in *Fig. 3* of Part XVI may be used for locating shorts, crosses and grounds where the clear and faulty wire is the same gauge and length. When the clear wire is of a different gauge and/or length, the method and formula illustrated by *Fig. 4* is used. Either one or the other of the above methods and formulae, whichever is applicable, will be used in the following illustrations of Varley loop fault locations.

PART XVII. Section 3—Cable Trouble. The preceding article in this series appeared in the Aug. 12 issue, p. 17.

Fig. 5 shows a ground location method with the connections to the bridge terminals and a sheath and/or a central office ground connected to terminal "G." The distance calculations are based on pair feet of 22-gauge cable per ohm times the X value, or 31 x 151 = 4,681 ft. from "E" to fault. Whenever a clear wire is available in the same cable having a moisture fault, it should be used as in *Figs. 5* or *6*. The resistance of the fault must be considered when selecting the wire to be connected to terminal "R," and the rule previously explained applies as to the values of this resistance. When all wires show moisture faults as in *Fig. 7* (in this case, a No. 10 B&S gauge

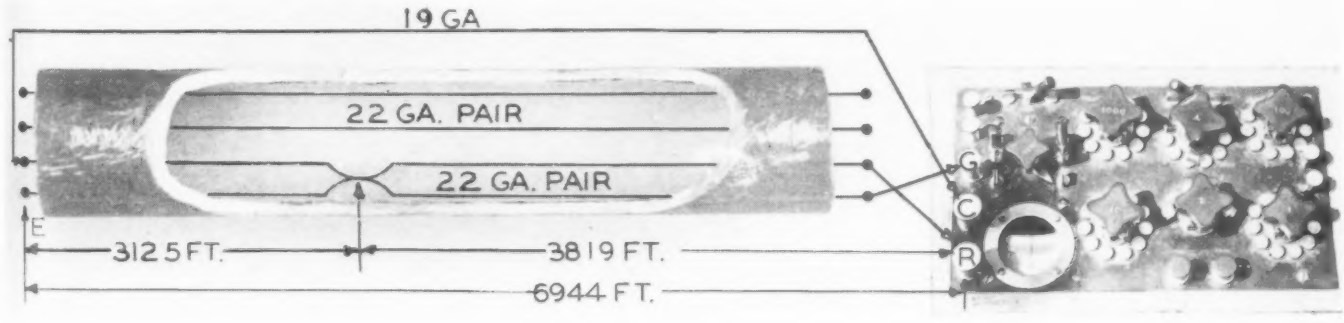


Fig. 4. Locating short with clear wire outside cable. Loop L = 168 ohms; A = 10; B = 100; R = 1002. $X = \frac{BL - AR}{A + B}$ or $\frac{(100 \times 168) - (10 \times 1002)}{10 + 100}$ = 61.6 ohms—equals resistance of single 22-gauge wire bridge to fault. 22-gauge single wire = 62 ft. per ohm. Distance from bridge to fault equals 61.6 x 62 or 3,819 ft.

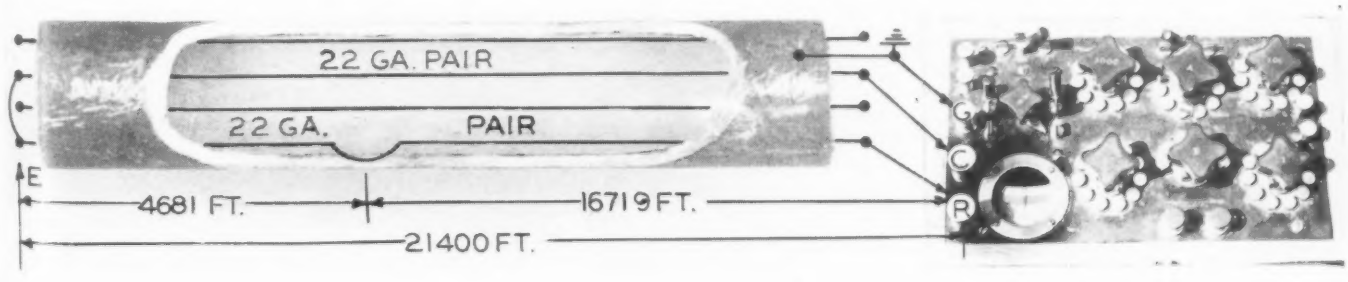


Fig. 5. Locating ground. Loop L = 690.3 ohms; A = 100; B = 100; R = 151. $X = \frac{A}{B} R$ = 151 ohms. Distance from E to fault = 151 x 31 = 4,681 ft.

open wire was used as the clear conductor), the distance from the bridge to the fault in feet is based on 62 ft. per ohm of single 22-gauge wire times the X value of the formula, or 62 X 58.4 = 3,620 feet from the bridge to the fault.

Fig. 8 illustrates a fault in a cable made up of a section of 22-gauge cable adjacent to the bridge and a 19-gauge extension. The X value of five ohms times 62 ft. of 19-gauge cable pair feet per ohm, or 5 X 62 = 310 ft. or the distance "E" to the fault. If the X value had been more than 50.9 ohms, then the fault would have been located in the 22-gauge cable section, as the total loop resistance of the 19-gauge cable section is 50.9 ohms. For example, if the X value were 70.9 ohms, then the distance from the junction

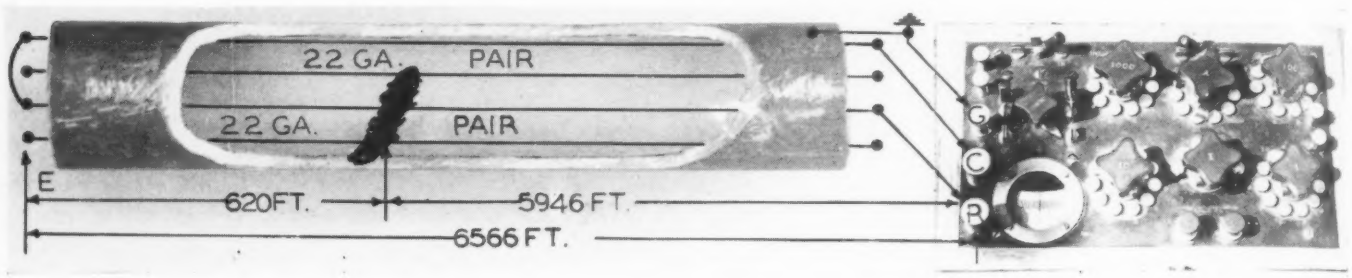


Fig. 6. Locating moisture fault with clear wire in same cable. Loop L = 211.8 ohms; A = 100; B = 100; R = 20. X = $\frac{A}{B}$ R = 20 ohms. Distance E to fault = 20 x 31 = 620 ft.

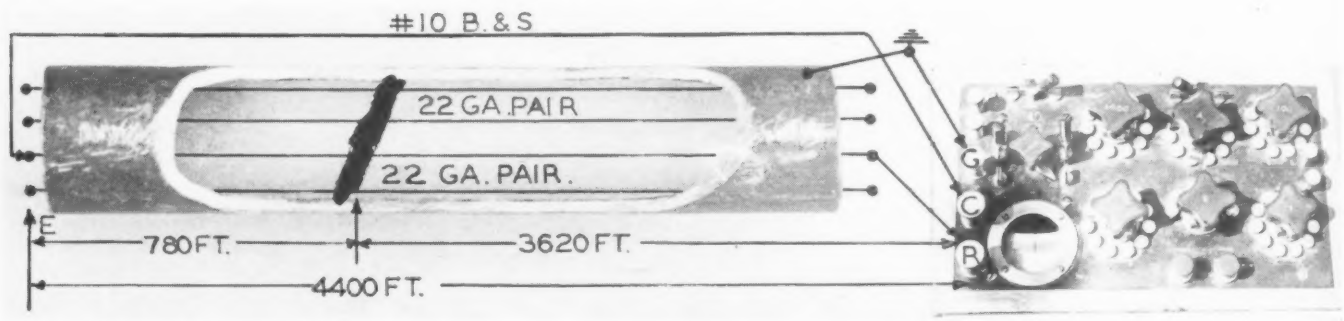


Fig. 7. Locating moisture fault all pairs wet. Make loop measurement which in this case enters into the calculations. Loop res. L = 75.3 ohms; A = 10; B = 100; R = 110.6. X = $\frac{BL - AR}{A+B}$ = 58.4 ohms—equals resistance of single 22-gauge wire bridge to fault. Distance from bridge to fault equals 58.4 x 62 = 3,620 ft.

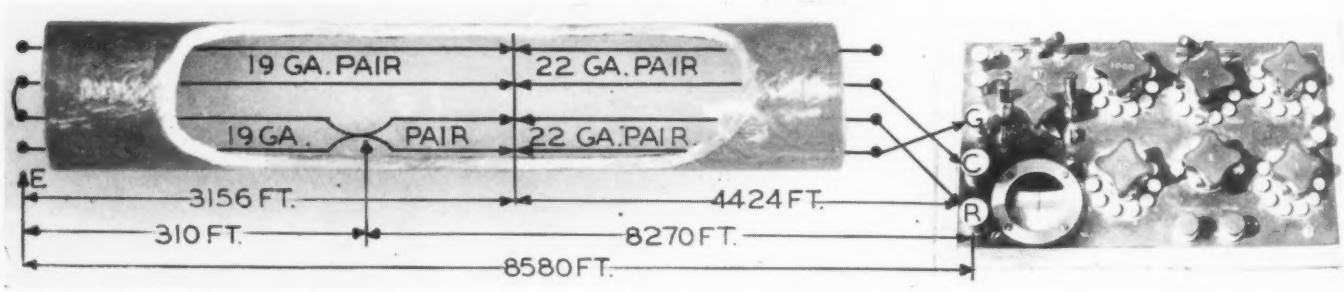


Fig. 8. Locating short in different gauge section of cable. Loop L = 193.6 ohms — 4,424 ft. 22-gauge cable = 142.7 ohms, 3,156 ft. 19-gauge cable = 50.9 ohms — Total loop res. equals 193.6 ohms. A = 100; B = 100; R = 5. X = $\frac{A}{B}$ R = 5 ohms. Distance E to fault = 5 x 62 = 310 ft.

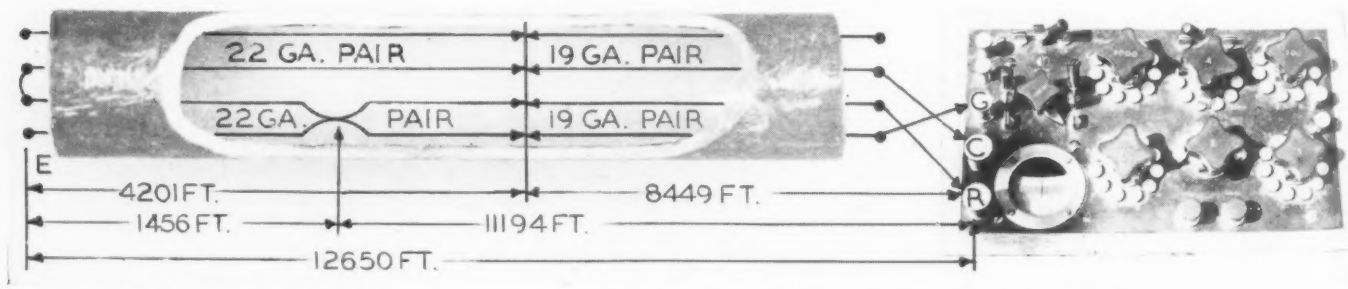


Fig. 9. Locating short in 19- and 22-gauge cable. Loop L = 271.79 ohms — 4,201 ft. 22-gauge cable = 135.516 ohms; 8,449 ft. 19-gauge cable = 136.274 ohms — Total loop res. = 271.790 ohms. A = 100; B = 100; R = 46.96. X = $\frac{A}{B}$ R = 46.96 ohms. Distance E to fault = 46.96 x 31 = 1,456 ft.

of the 22 and 19-gauge cable to the fault would be 70.9, 50.9 or 20 ohms times 31 ft. per ohm of 22-gauge cable pair feet, or 20 X 31 = 620 ft. from the 19 and 22-gauge junction toward the bridge.

In *Fig. 9*, the 19-gauge cable is adjacent to the bridge, and extended by a length of 22-gauge cable. The same method as in Fig. 8 may be applied if the value X is greater than the total loop resistance of the 22-gauge cable. In this case, the difference represents the distance from the 22 and 19-gauge junction toward the bridge.

It is not uncommon to have as many as three different gauge combinations in exchange cable runs, starting from the central office with 24-gauge or smaller, then 22-gauge followed by a 19-gauge section as shown in *Fig. 10*, or in some other sequence. By following the same procedure as illustrated in *Figs. 8* and *9*, the fault location may be determined regardless of in which gauge the trouble is found. When the clear and faulty pairs are made up of two or more gauge sections, the length of each section in feet must be known and the loop resistance of each gauge calculated according to the cable indicating the pair feet per ohm of each gauge.

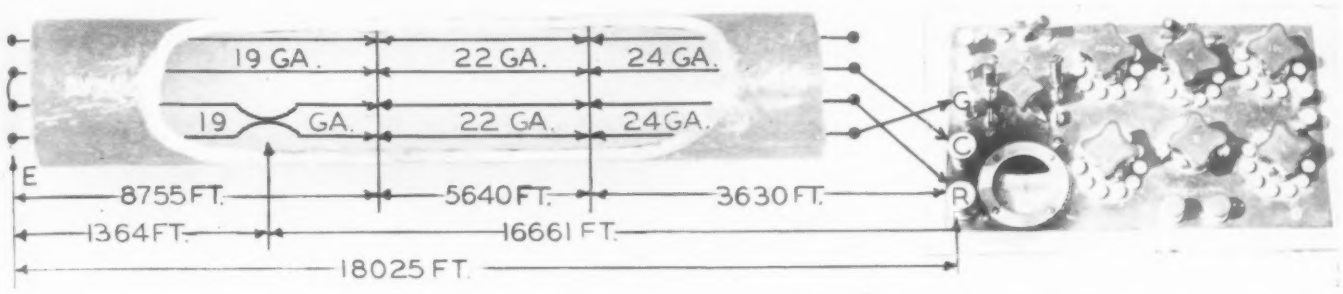


Fig. 10. Locating short where three different gauges are involved. Loop L = 509.3 ohms — 3,630 ft. 24-gauge cable = 186.15 ohms, 5,640 ft. 22-gauge cable = 181.93 ohms, 8,755 ft. 19-gauge cable = 141.22 ohms — Total loop resistance 509.30 ohms. A = 100; B = 100; R = 22. X = $\frac{A}{B}$ R = 22 ohms. Distance E to fault = 22 x 62 = 1,364 ft.

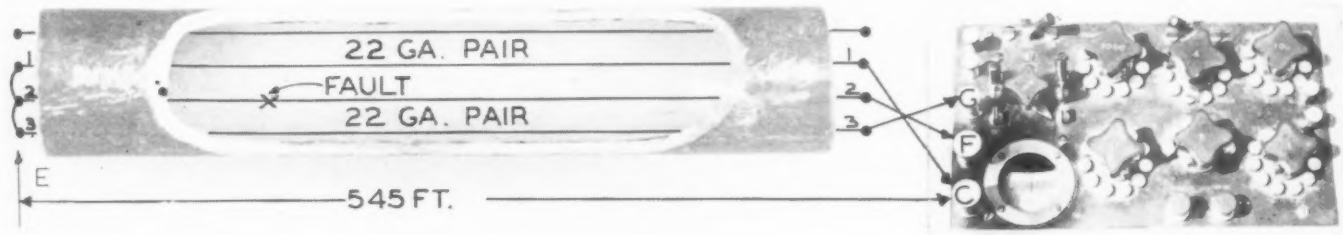


Fig. 11. Test for determining the exact feet per ohm of faulty wire — 545 ft. 22-gauge cable. Loop L = 18 ohms; A = 100; B = 0; R = 102. X = $\frac{L\,A}{A+R}$ or $\frac{18 \times 100}{202}$ = 8.91 ohms. 545 ÷ 8.91 = 61.167 ft. per ohm of the single 22-gauge faulty wire.

Fig. 12. Murray loop location for shorts — 545 ft. 22-gauge cable. Loop L = 18 ohms; A = 100; B = 0; R = 200. X = $\frac{L\,A}{A+R}$ or $\frac{18 \times 100}{100+200}$ = 6 ohms, equals the resistance of the single 22-gauge faulty wire from the bridge to fault or 6 x 61.167 = 367 ft. from bridge to fault.

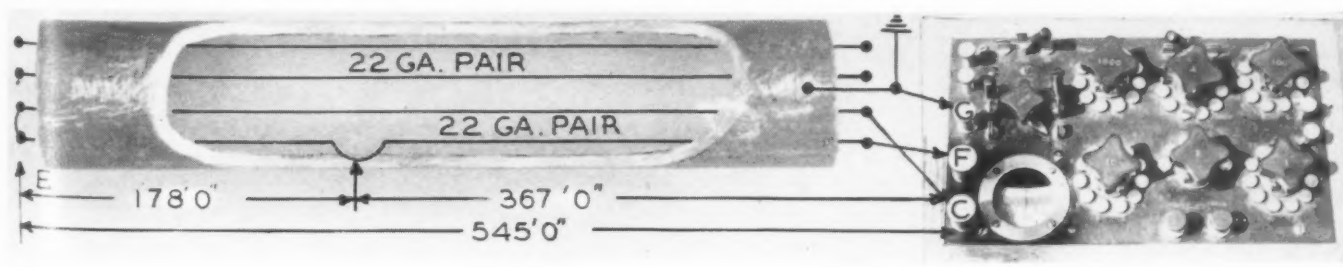


Fig. 13. Murray loop test for locating grounds — 545 ft. 22-gauge cable. Loop L = 18 ohms; A = 100; B = 0; R = 200. X = $\frac{L\,A}{A+R}$ or $\frac{18 \times 100}{100+200}$ = 6 ohms — equals the resistance of the single 22-gauge wire from bridge to fault or 6 x 61.167 = 367 ft. from bridge to fault.

In *Fig. 10*, the X value equals 22 ohms which is less than the total calculated loop resistance of the 19-gauge section. Therefore, the fault must lie within that section as illustrated. If the X value is more than 141.22 ohms, but not more than 323.15 ohms, then the fault will be located within the 22-gauge section as previously described.

If the X value exceeds 323.15 ohms, but is less than 509.30 ohms, then the fault will be in the 24-gauge section of *Fig. 10*. For example, 8,755 ft., 19-gauge pair ft., 141.22 ohms plus 5,640 ft., 22-gauge pair feet, 181.93 ohms, equals 323.15 ohms. Let us assume the X value of the location is 350.00 ohms, then subtract the total loop resistance of the 19 and 22-gauge sections, or 323.15 ohms, which leaves 26.85 representing the loop resistance or X value from the junction of the 22 and 24-gauge

(Please turn to page 36)

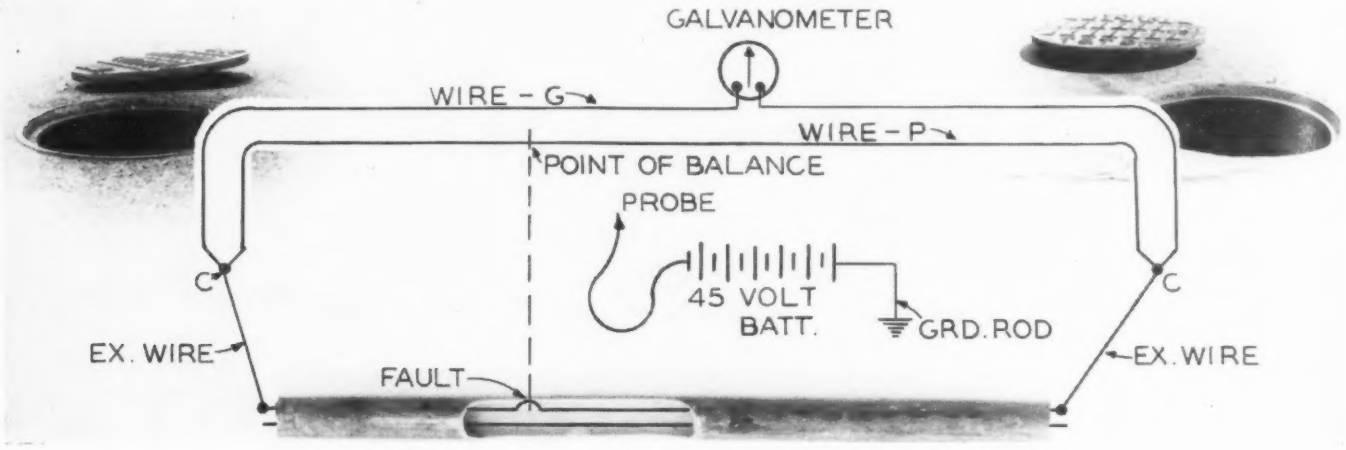


Fig. 14. Locating faults in buried or underground by galvanometer and battery method.

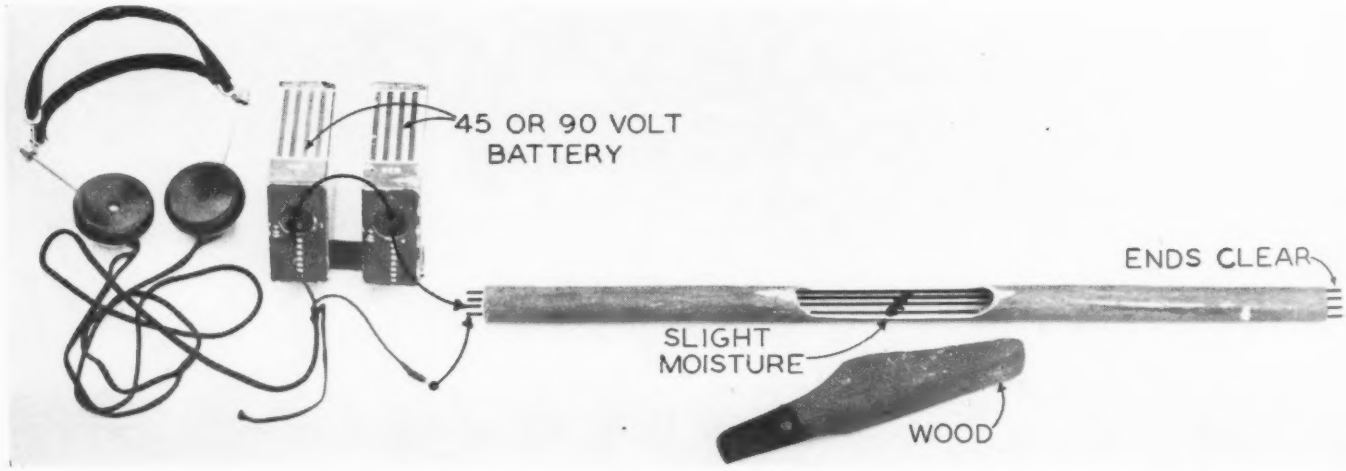


Fig. 15. Tapping method for locating moisture shorts, crosses or grounds.

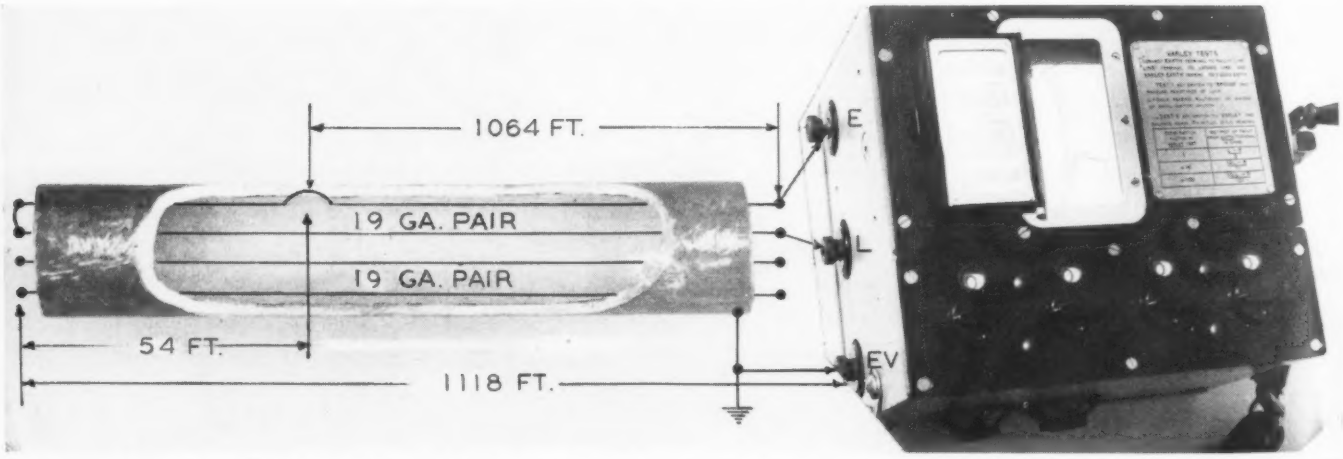


Fig. 16. The Varley loop "Bridge-Meg" as used for making a Varley loop ground location. Loop resistance of 22-gauge test leads from bridge terminal E to cable equals .68 ÷ 2 or .34 ohm. L = 19.85 ohms. Ratio switch = ÷ 10 = 100.3 Formula: $X = \frac{10\,L - R}{11}$ or $\frac{(10 \times 19.85) - 100.3}{11}$ 8.92 ohms; 8.92 — .34 resistance of one 22-gauge test lead from bridge to cable = 8.58 ohms x 124 = 1063.92 ft., the distance from the cable terminal to the fault.

TIMER AND AUTOMATIC RURAL CUT-OFF

By C. H. DAUBENDIEK
Secretary
Jefferson (Iowa) Telephone Co.

IT IS true that the average farm telephone circuit, carrying eight or more subscribers, has been the butt of jokes for many years in TELEPHONY. A case in point was an item under "Flashes and Plugs," on page 6 of the Aug. 5 issue entitled "Burning Beans." After some 45 years in the telephone business, during which many serious and thousands of amusing incidents have occurred, and having listened to complaints from unfortunate subscribers, and especially from those who wish up-to-date, speedy telephone service and those who are responsible for payment of bills, etc., the writer decided it was high time that his company developed an automatic controlled timer and cut-off on farm party lines.

Everyone I talked with agreed that it might be false economy or perhaps too advanced an idea to make individual line service available to all farm subscribers. However, many agreed that if conversations were limited to a reasonable length of time most any group of 10 farmers could get ample service to meet their needs, and so after having spent hundreds of dollars buying the best advertising we could find bearing on the problems of good party-line telephone manners, we sent out a questionnaire to all of our farm line subscribers as follows:

DEAR SUBSCRIBER:

Your manager has just returned from a Spring Conference for Executives of the National Independent Telephone Association, where full investigations were made as to the latest and best methods of furnishing telephone service, and upon discussion, we found that, on the whole, there was very little, if any, improvement that could be made for farm line service such as we have here in Jefferson territory, unless it might be an automatic timing device for conversations, wherein, conversations would be limited to a three, five or seven-minute period.

Such a device would cost in the neighborhood of $1,500 to install on our system here and if installed would not incur any additional expense to the subscriber over the existing rates.

WHAT DO YOU THINK?

Should your telephone company install such apparatus, wherein telephone conversation would be limited to any given period per call in order that more subscribers could get a chance to use their lines for important or emergency calls?

YES ( ) NO ( )

Would you like to limit the conversation to:

THREE MINUTES? YES ( ) NO ( )
FIVE MINUTES? YES ( ) NO ( )
SEVEN MINUTES? YES ( ) NO ( )

Please discuss this matter with your friends and your family and return the questionnaire marked as you wish it, either with your next remittance or hand it in over the counter. Your telephone company will be glad to accept the majority rule and analysis of this questionnaire to the end that we furnish as near as possible the grade of service you desire.

Yours Truly,
JEFFERSON TELEPHONE CO.
C. H. DAUBENDIEK, Manager

These questionnaires were inserted with monthly statements and out of 500 questionnaires so sent out, 125 returned the questionnaire with results as follows: Ten persons desired no controls whatever, all of the balance wished some limitations and 90 per cent of those wishing limitations thought five minutes were amply sufficient for any telephone conversation. These results were presented to our board of directors and they all agreed that an effort should be made to control the time limit of calls automatically, without any intention of impairing the service to anyone, but making the service generally more attractive to all, including business and residence telephones in town.

Our engineer, Gene R. Daubendiek, was put to work on the project and came up with the circuit as shown in the accompanying drawing (See next page). Suitable relays, and a timing device, and other apparatus were procured and assembled by him. (Also see photo of apparatus on this page.)

The apparatus was installed in a bay adjacent to our main frame and cabled to farm lines and trunk lines to a dial exchange located within our territory. The timer was set to disconnect calls at six-minute intervals.

After the apparatus had been installed for one week, sufficient interest had been shown in the project that our local newspaper editor came in and investigated the apparatus, took pictures, and wrote a feature article which was published in the Jefferson *Bee and Herald*.

The writer obtained a list of leaders in farm bureau and club work (women) and personally called representatives to get their reaction to the timing device. The one common answer was: "We believe the timer to be a good thing. We want it."

One lady in particular said that in her experience in club work it usually took her from two and one-half to three days each month to arrange for activities, committee meetings, etc., but with the timing device in operation she had been able to make all of her club arrangements in one day, and stated she knew that it must have been a great relief to the rest of the subscribers on her line. She said that before the timing device was installed about half of her calls were reported "busy," whereas, with the device she was able "to get through" in almost every call she made.

But the real joy comes from talking with busy farmers who are outspoken in praise of their present telephone system, which includes full common battery service with lines positively limited to 10 per line, full-selective ringing, with handsets. Even more pleasing are

the dealings with the farmers across the cashier's counter.

I expect some reaction later on. It will come from those who have been cut off many times, and especially from the women who set a pot of beans on the stove with plenty of water on them and time their calls by the burning of the beans—irrespective of others' rights to use a party line. The writer, or Gene R. Daubendiek, will be happy to answer any questions or to aid in the installation of timing devices on rural lines.

V V

Activate Battalion Sponsored By California Company

Alerted for active duty, reserve members of the 314th Signal Heavy Construction Battalion, sponsored by Associated Telephone Co., Ltd., Santa Monica, Calif., received orders during August to report for an unknown destination on Sept. 11, 1950.

The 16 Associated company members in the unit include the Commanding Officer, Maj. Oliver L. Akins, Jr., of the general commercial department; Executive Officer, Capt. Irwin C. Vander Heide, of the general engineering department; Capt. Paul F. Sercu, 1st Lt. Leo A. Birch, 1st Lt. John G. Gibbons, 1st Lt. Reino J. Rantman, 1st Lt. John J. Higgins, 2nd Lt. Stephen I. McCaron, Sgt. Joseph R. Antal and Sgt. Rudolph R. Black, Santa Monica; Capt. William D. Anderson and Cpl. Victor Santoro, Long Beach; Capt. George Janesick, Laguna Beach; 1st Lt. James B. Black and 1st Lt. Albert Bates, Whittier, and 1st Lt. William J. A. Thomas, Downey. The remaining members of the unit are not employed by the company.

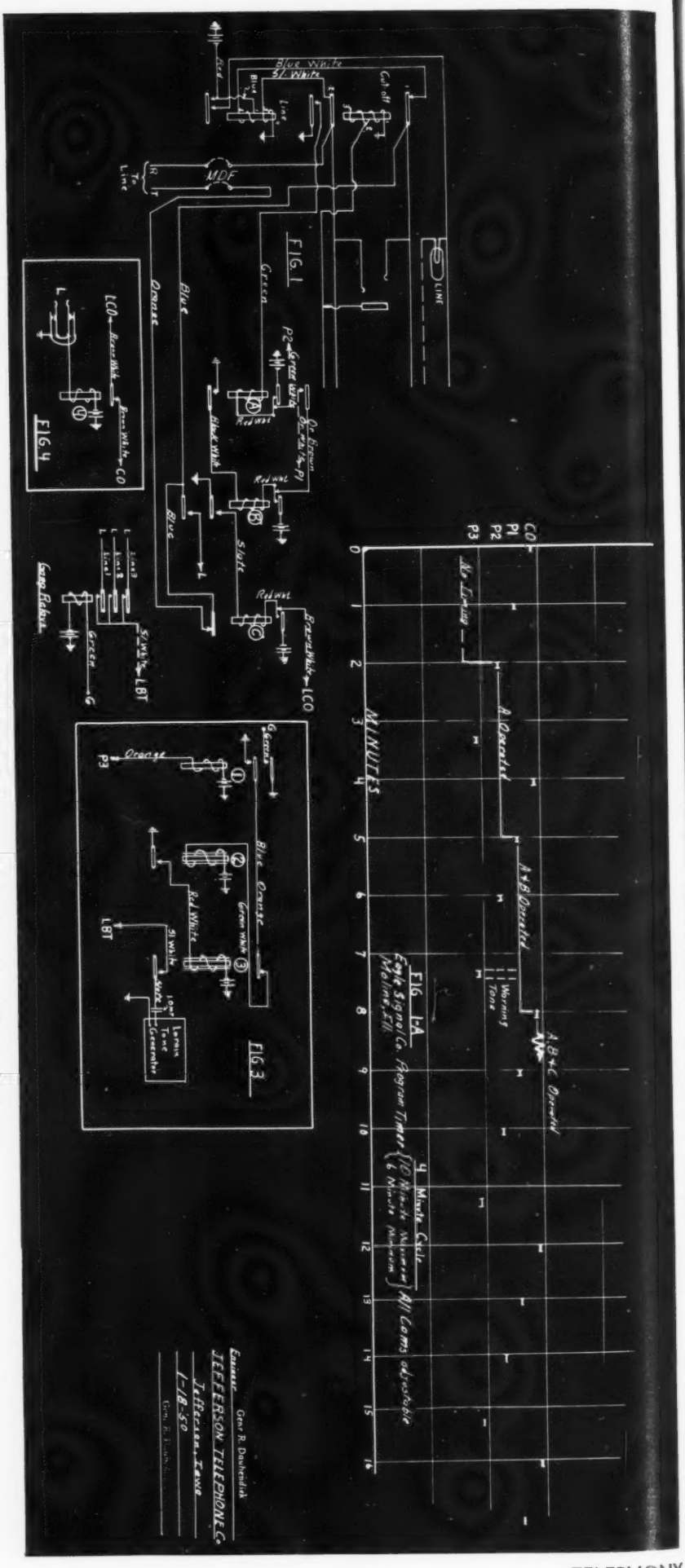
The battalion, organized in October, 1948, was one of the first two Signal Corps affiliated units to be formed by telephone companies in the west. The other unit, a Signal Depot Co., was also sponsored by the company.

V V

>> An elderly Arkansas woman is the oldest living charter member of her church. When she was confined to a wheel-chair at home she found that church services were the thing she missed most from her formerly active life.

Her son took her problem to the Southwestern Bell Telephone Co. with the result that the services are now brought into her home by a telephone hook-up.

Transmission is so good that she says, "When the collection plate is passed you can hear the coins clinking."



Schematic drawing of automatic timer and cut-off for rural calls used in Jefferson, Iowa.

Courts and Commissions

Fix Rates for Oklahoma Company After Hearing

A hearing on exceptions to the findings of one of its referees resulted in the following rates being fixed in an order of the Oklahoma Corporation Commission issued Aug. 17, applying to the Jones-Choctaw Telephone Co., Choctaw:

One-party, business, wall	$2.75
One-party, business, desk or handset	3.00
Two-party, business, wall	2.25
Two-party, business, desk or handset	2.50
One-party, residence, wall	2.00
One-party, residence, desk or handset	2.25
Two-party, residence, wall	1.75
Two-party, residence, desk or handset	2.00
Four-party, residence, desk or handset	1.75
Rural business, wall	2.25
Rural business, desk or handset	2.50
Rural residence multi-party, wall	1.75
Rural residence multi-party, desk or handset	2.00

The company was authorized to make a $2.00 moving charge and a charge of $2.00 for service connection at Jones. New rates will be effective on the next billing date.

V V

FCC Issues Separate Rules on Telephone, Telegraph Records

The Federal Communications Commission has separated its rules governing preservation of records by common carriers by rescinding the present part 42, governing preservation of common carrier records in general, and replacing it with a new part 45, covering preservation of records of telephone carriers, and a new part 46, applying to records of wire-telegraph, ocean-cable and radiotelegraph carriers.

This proposal, which was made Sept. 28, 1949, was prompted by determination that the records maintained by telephone and telegraph carriers preclude uniform descriptions and retention periods. The new lists of items for each classification represent the deletion of obsolete material and the addition of new items. The subdivisions under the different items are more descriptive of present day records, and provide greater flexibility with respect to prescribed retention period. For example, they permit the destruction of voluminous correspondence and other records after the expiration of a period sufficient to establish the validity of the basic records.

Storage space problems of the industry are further met by reduction in the prescribed periods of retention of certain records, and by permitting microfilming of other records required to be retained. In addition to microfilming, recognition is given to such modern record-preservation methods as tabulating cards, humidified storage, etc.

Requirements for indexing records are modified to permit the maintenance in the principal office of the carrier of a general descriptive list of the records, showing their locations, with a detailed index maintained only at the point where the records are kept. Copies of the index are no longer required to be filed with the commission. Likewise, requirements for periodic filing with the commission of resolutions of appointment of a supervisor for destruction of records, and for the filing of certificates involving the accidental destruction of records except where such destruction is premature, are eliminated.

The new parts 45 and 46 are effective Oct. 1, 1950. However, any carrier may adopt them sooner if he so desires.

V V

Court Vacates Rate Increase Order for Illinois Bell

Circuit Judge William R. Dusher of Rockford, Ill., on Aug. 17 vacated an Illinois Commerce Commission order of Oct. 7, 1949, authorizing the Illinois Bell Telephone Co. to fix higher rates to produce an increase in gross revenues of approximately $22,800,000 annually.

Although the immediate reaction was that this would bring lower telephone rates for Chicago and other Illinois customers, a company spokesman said this impression might not be correct. He said the court's action might not suspend the higher rates and that it was possible that even higher rates would result.

He noted that when the company first asked for higher rates, it placed the value of its property at $510,377,-881. In formulating the rate increase granted last October, the commission fixed the "fair value" at not more than $365,676,465.

In a "memorandum of decision," Judge Dusher asserted the commission should not have ignored the company's estimate. By so doing, the commission violated a rule set down in previous utility cases before the Illinois Supreme Court.

Judge Dusher gave the commission the choice of revising its decision and returning it to circuit court for approval or appealing the circuit court ruling to the Illinois Supreme Court.

The ruling was made on a joint appeal by the company and certain telephone customers in Cook County and the city of Rockford. The company asserted the increase was insufficient; the patrons contended it was too much. The company had asked an annual increase of $34,000,000.

The increase involved was put into effect Oct. 10, 1949, and raised residential basic local service approximately 30 cents a month and business basic local service about $1.00 a month.

No comment was made by the commission, a spokesman explaining that no statement would be forthcoming until the legal staff had studied Judge Dusher's ruling.

V V

California Company Files Amended Rate Application

An amended application for an increase in telephone rates has been filed with the California Public Utilities Commission by the California Water & Telephone Co., Monrovia, according to E. R. Fisher, district manager.

An original application for higher rates was filed in September, 1947, and

(Please turn to page 26)

TYPE 40 DESK MONOPHONE

Cat. No. AA-50—Automatic, Metallic Ringing
Cat. No. AA-51—Automatic, Ground Ringing
Cat. No. AA-52—Manual, Blank for Dial—Metallic Ringing
Cat. No. AA-53—Manual, Blank for Dial—Ground Ringing
Cat. No. AE-29—Magneto—1400-ohm Ringer
Cat. No. AE-30—Magneto—2500-ohm Ringer

ll Like AUTOMATIC ELECTRIC Monophones

Subscribers like Monophones because of their art, modern design, their ease of handling d the clear, life-like transmission provided by tomatic's all-positions transmitter, capsule ceiver and famous anti-sidetone circuit.

Maintenance men like Monophones because ce a Monophone is installed, it operates de-ndably year after year with a minimum of ttention. Monophone ringers, for instance, are ctory adjusted for permanence. Monophone's uiet-as-a-whisper" dial has proved its worth in hundreds of thousands of installations. The same dependability is reflected in every detail of Monophone design and construction.

Operating company executives choose Monophones both to please their subscribers and to keep maintenance and replacement costs at the lowest possible level.

You're sure to like Monophones, too. Just make your selection from the complete Monophone catalog—sent promptly on your request.

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems
Makers of Telephone, Signaling and Communication Apparatus . . Electrical Engineers, Designers and Consultants

Distributors in U. S. and Possessions: Automatic Electric Sales Corporation
Export Distributors: International Automatic Electric Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.

in December of that year the commission allowed the company an interim increase to provide an additional revenue of $105,000. Wage increases made since the granting of this interim rate increase alone have consumed more than 70 per cent of the additional revenue, Mr. Fisher said.

Rate increases will range from 75 cents to $1.50 for business telephones and 25 cents to 75 cents for residence telephones.

V V

N. C. Independent Petitions for Increases at Three Exchanges

The North State Telephone Co., High Point, petitioned the North Carolina Utilities Commission Aug. 15 for permission to increase its rates at all exchanges by a total of $131,042.20 per year.

It seeks an increase of $130,727 in rates at High Point, where it has 13,752 installations in service; $19,999.20 at Thomasville, where it has 3,790 installations and $4,386 at Randleman, where it has 657 installations.

In addition, the company operates 698 farmer-owned stations and 324 subscriber-owned PBX systems.

At High Point, one-party business rates would be increased by $1.75 a month to $7.00; two-party business by $1.75 to $5.50; one-party residence rates by $1.00 to $4.00 and four-party residence rates by 50 cents to $2.50.

At Thomasville, business rates would be raised by $1.50 to a rate of $6.00 a month for one-party service and by 75 cents to $3.50 for two-party service. One-party monthly residence rates would be raised by 75 cents to $3.50 and four-party rates by 40 cents to $2.40.

At Randleman, one-party business rates would be increased from $3.00 to $4.50 and the two-party rate would be $3.75. One-party residence rates would be increased by $1.00 to $3.00 a month and two-party rates would be raised 50 cents, setting the new rate at $2.00 a month.

V V

Dismisses Discrimination Charges Against Illinois Bell

The Illinois Commerce Commission Aug. 16 dismissed petitions by the City Club of Chicago and the American Civil Liberties Union attacking as unconstitutional an Illinois Bell Telephone Co. ruling providing for removal of telephones used for unlawful purposes, such as in handbooks or gambling houses (TELEPHONY, June 3, p. 27).

The regulation has been in effect since 1913, but it did not become official until it was filed with the commission and approved Mar. 9. The company reported at hearings that it has removed more than 12,000 telephones under the rule since 1938.

The petitioners alleged the regulation to be unreasonable and claimed it gave powers of law enforcement to a private corporation. They alleged it permitted the company to deprive citizens of their rights without due process of law.

In dismissing the petitions, the commission held the petitioners merely alleged the regulation was unreasonable and unconstitutional, without offering any evidence showing anyone had been unlawfully deprived of his rights as a result of the rule.

V V

Operators' Union Opposes Bell Attempt to Delay Increase

New Jersey Supreme Court clerks said Aug. 19 the telephone operators' union has filed papers opposing a motion to delay further an arbitrated wage increase.

The motion was brought before the supreme court by the New Jersey Bell Telephone Co., which is fighting against a $2.50 weekly wage boost awarded the operators by a state arbitration board. The board was upheld by the Appellate Division of Superior Court (TELEPHONY, Aug. 19, p. 33).

The increase affects about 11,000 members of the New Jersey Traffic Division 55, Communications Workers of America (CIO). It is retroactive until Apr. 20.

Payment was delayed by a company suit in the appellate division, and when it upheld the arbitration board, the company appealed to the supreme court.

Recently, the appellate division refused to stay the increase until the supreme court hands down a final ruling. The company appealed this to the supreme court also.

V V

Washington Sale Approved

The West Coast Telephone Co., Everett, was recently granted permission to purchase the Telephone Service Co., Kirkland, by the Washington Public Service Commission.

V V

Approves Sale and Purchase

A joint application of the Normana Telephone Co. to sell and the Wendell Telephone Co. to buy the property of the former company was approved by the Minnesota Railroad & Warehouse Commission Aug. 9.

Southern Bell Asks for Rate Hearing in South Carolina

The Southern Bell Telephone & Telegraph Co. has asked for a hearing before the South Carolina Public Service commission for increases in its schedule of rates in all of its 64 exchanges in every county of the state, serving 187,712 telephones, as well as large quantities of toll or long distance facilities.

The company reported that the original cost of the company's properties "used and useful in furnishing its intrastate telephone service in South Carolina amounted to about $40,016,000 as of June 30, 1950."

V V

Central Telephone Requests Stock Issue for Expansion

The Central Telephone Co. on Aug. 14 asked the North Carolina Utilities Commission for permission to issue $1,000,000 worth of stock to be used for refinancing and expansion.

A Delaware company with headquarters in Lincoln, Neb., and a subsidiary of Central Electric & Gas Co., Lincoln, the company serves 19 North Carolina communities with North Carolina headquarters at Mt. Airy. The new stock issue would be broken into 100,000 shares of $10 par value each.

In its petition, the company said each Central Electric & Gas stockholder would be permitted to buy one share of the new stock for each 13 shares of stock he now holds. Other stock would be assigned to the Middle States Telephone Co.

V V

Establishes Exchange Rates

The Midwest Telephone Co., Parkers Prairie, was granted authority Aug. 9 by the Minnesota Railroad & Warehouse Commission to establish rates at its proposed Miltona exchange. The approved rates will give the company a net income of $1,371, or a return of 5.37 per cent on plant valued at $25,523.

V V

Summary of Commission Rulings and Hearings

Kansas Corporation Commission

Sept. 1: Hearing on application of Fontana Telephone Co. and Elk Falls Telephone Exchange for authority to change rates.

Sept. 15: Hearings on applications of F&M Telephone Co., Ulysses, and of Richmond Home Telephone Co., for authority to change rates.

Sept. 25: Hearing on petition of Osage Telephone Co., Osage City, for authority to change rates.

Louisiana Public Service Commission

Aug. 25: Hearings on service complaints of Kaplan Junior Chamber of

Commerce against Kaplan Telephone Co.; Ville Platte Chamber of Commerce against Southwestern States Telephone Co., Brownwood, Tex.; and City of Glenmora against Forest Hill Telephone Co., Glenmora.

Aug. 25: Hearing on complaint of Gulf Tele-Magnet Corp. against Southern Bell Telephone & Telegraph Co. regarding use of automatic answering device.

Aug. 25: Hearing an application of LaSalle Telephone Co., Jena, for authority to increase rates.

Missouri Public Service Commission

Order issued suspending rates of Western Light & Telephone Co., Kansas City, Kan., for 120 days after Sept. 1 in connection with municipal tax adjustment.

Aug. 15: Order issued suspending rates of Doniphan Telephone Co. for 120 days beyond Aug. 20.

Oklahoma Corporation Commission

Sept. 7: Hearing on application of Amorita Telephone Co. for authority to increase rates.

Sept. 7: Continued hearing on application of certain residents of Noble, Okla., for rural service from the Southwestern Associated Telephone Co., Dallas, Tex.

Sept. 12: Continued hearing on complaint against the service of the Ardmore-Graham Telephone Co.

Sept. 20: Continued hearing on application of Medford and other towns for free inter-exchange service from the Southwestern Bell Telephone Co.

Sept. 21, 22, Oct. 4, 5: Hearings on application of Southwestern Associated Telephone Co., Dallas, Tex., for increased rates in Oklahoma.

Wisconsin Public Service Commission

Aug. 21: Hearing on complaint of Mrs. John J. Jordan against Wisconsin Telephone Co. and Mt. Vernon Telephone Co.

Aug. 22: Hearing on application of Burlington, Brighton & Wheatland Telephone Co., Wheatland, for authority to increase rates.

IMPROVE EMPLOYE RELATIONS WITH SERVICE EMBLEMS

By D. F. DAVISON
President
Ogden Telephone Co.
Spencerport, N. Y.

FOR years I have recognized the fact that the small Independent telephone companies had no means of recognition of faithful service of their employes.

It is a human trait to wear with pride an emblem that portrays loyalty and achievement. Successful employe relations of many business and industrial firms have been greatly influenced by the establishment of a company policy of recognizing loyal and faithful service over a period of years.

Service emblems awarded according to a regular plan will inspire workers. Recognition of this kind tends to better the relationship between employer and employe and stimulates incentive to greater and more loyal effort. The five-year man will look forward to receiving the 10-year service emblem; the 10-year man is on his way to 15 years, 20 years, 25 years and more of service. These employes are proud of their company and feel they are really a part of the organization. They serve as constant reminders to younger employes that here, service and loyalty are truly rewarded and appreciated. Goodwill and loyalty stimulated by service awards cannot be measured in dollars and cents.

A local company was contacted in regard to the manufacture of an emblem. The design shown in the accompanying illustration was devised. It is a gold pin with a field of blue enamel.

Considerable expense is involved in the making of a die to manufacture an emblem of this sort. Therefore, I felt that if an emblem could be universally used, the cost of such service awards could be kept at a minimum to every purchaser.

In addition to the service award emblem, a certificate of service such as illustrated would be presented simultaneously to every employe.

I would be very pleased to know what telephone companies would be interested in adopting the presentation of these awards.

V V

>> Telephone facilities for Washington's White House correspondents have been relocated since the transfer of President Truman's weekly press conferences from the White House to the Executive Office Building.

A row of telephone booths has been placed in the corridor outside the door to the Executive Office Building conference room. Reporters drew cards for the nearest booths.

OGDEN TELEPHONE COMPANY

SPENCERPORT NEW YORK

In recognition of completion of

5 years

continuous, loyal and conscientious service

in performance of duties assigned

Mary Jones

is entitled to receive and wear the

Official Service Award Emblem

of this company, of which this certificate is a token

Date 5-20-50

Donald F Davison
President

THE "*Unbeatable Partnership*"

By HAROLD CHARLES
Production Manager
Radio-Television Division
Stromberg-Carlson Co.

A FEW days ago I received a call from my boss, S. R. Curtis, asking me to write a story for the *Speaker*.

Well, this is my opportunity to write about something that I believe is imperative to the success of our company. This I call "*The Unbeatable Partnership.*"

I suppose a definition should follow, and that is very simple—just "*Labor and Management.*"

The more I think about this definition, the more I suspect that I had better take a second look, for all too often, we of management have found ourselves victims of semantics. For example, we hear Labor-Management Conference, Labor-Management Conflicts, Labor-Management This and Labor-Management That. Let us take one of these for examination.

"*Labor-Management Conflicts*"—Obviously the very use of these words implies major differences between Labor and Management. *Do these exist?* I am inclined to think that whenever conflict appears present, it actually is between Labor and Capital rather than Labor and Management.

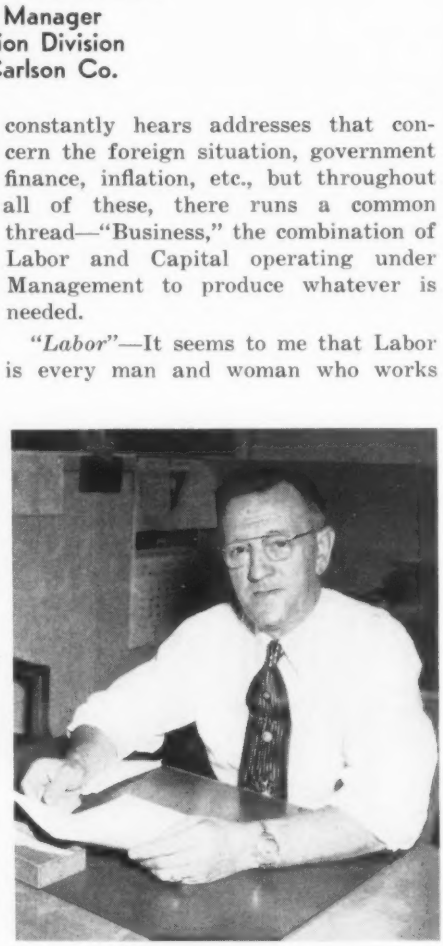
This error probably is due to the belief that Management and Capital are *one* and the *same*. Today such is true *only* in certain cases, and the number of these is on the wane. Now we must ask ourselves, "Is Management a representative of Capital?" Of course it is, but surely Management is not solely representative of Capital. Management must be interested in representing Labor as well, since the two of them make up the partnership which Management is to direct. Here it should be added that Management has to represent Labor *to* Capital and Capital *to* Labor and both jobs must be done well.

What Is "Business Enterprise"?

"*Business Enterprise*"—It seems to me that any "*Business Enterprise*" is a combination of Labor and Capital operating through Management for the purpose of making a profit through furnishing goods or services to those who need or want them.

But that is not enough. A "Business Enterprise" has obligations beyond these—obligations to the community in which it operates, to the nation and, indeed, to the world. Our Congress constantly hears addresses that concern the foreign situation, government finance, inflation, etc., but throughout all of these, there runs a common thread—"Business," the combination of Labor and Capital operating under Management to produce whatever is needed.

"*Labor*"—It seems to me that Labor is every man and woman who works



HAROLD CHARLES

either with their heads or hands or both. In other words, Labor is anyone who works to make a living.

"*Capital*" — This term needs much clarification. Whenever the term capital is used, too many people think of rich men, great fortunes, huge pools of money. This is not the proper view. There are very few great fortunes these days and only a handful of really rich individuals. As far as pools of capital are concerned, these consist of the savings of a great many people. Most of these investors are so-called Labor—solid American citizens who have savings accounts, hold life insurance, own stocks and bonds.

Are You a "Capitalist"?

Therefore, isn't it safe to say that most Americans are capitalists? Isn't it equally safe to say that most Americans work for a living? Therefore, there is a great intermingling of Labor and Capital. And, I hold that anyone who tries to draw a fine line of distinction between the two is treading on dangerous ground.

Since the end of the war, it is quite possible that Labor, Capital and Management all have failed to recognize, to the full extent, their mutual obligations to the consumer. On the face of it, it seems fine to Labor for Labor to receive higher wages. It seems fine to Capital for Capital to enjoy larger profits. But, if these gains materially hurt any substantial segment of the consuming public, such gains are evil and are bound to be relinquished, perhaps with great penalty.

We always get back to the same fundamental. Management must cause Labor and Capital to work together in harmony for the good of the Enterprise as a whole. This end can be attained *only* if the Enterprise profitably furnishes something of value to all parties concerned — Labor, Capital, Management, Consumer and Society.

Management occupies the very special position of having no favorites to play. Management's job is to have everybody win. This is why I hold so firmly to the belief that those who seek to pit Management and Labor against each other are making a grievous error that is bound to hurt those who are supposed to be helped.

We of Stromberg-Carlson management constantly must seek to equip ourselves to serve adequately as a trustee for Labor as well as a trustee for Capital. We have learned many lessons. For example, we used to pay too much attention to getting information *down* the line and nowhere near enough to getting information *up* the line. We did a lot of things simply because so-called experts said they were the smart thing to do.

Must Understand Each Other's Problems

The whole thing gets down to one basic point. All of us desperately need to have an understanding of each other's problems. The lack of understanding is the root of most of our troubles these days. It has been furthered by the deliberate pitting of class against class, group against group, race against race in an effort to gain political or economic advantage. One of these pittings has been Labor against Management.

The result of all this is disunity, and disunity is a terribly evil thing, not only internally but externally. Only a unified nation can be strong, and surely the greatest single force in the striving for World Peace is a strong America.

Now then, if you really want to know what the "*Unbeatable Partnership*" is, here is *my* answer. The Unbeatable Partnership is Labor *and* Management —provided we of Management *and* Labor are good enough to do the job, and provided that we of Management

and Labor are permitted to do the job that we *can* do.

(Reprinted from the SPEAKER, *Stromberg-Carlson employe magazine.)*

V V

REA, Manufacturers Meet On Dial Specifications

A meeting between representatives of telephone central office equipment manufacturers and suppliers and telephone specialists in the Technical Standards Division of REA was held in Washington on Aug. 8 and 9.

The meeting was called by REA to discuss specifications for dial telephone central office equipment for use on systems of REA rural telephone borrowers. It is the intention of REA to establish specifications satisfactory for REA needs and acceptable to manufacturers.

REA staff members had prepared tentative specifications which had been distributed to manufacturers' representatives prior to the meeting. Each paragraph and each item were discussed thoroughly, differences of opinion were resolved, and standard specifications satisfactory to all present were agreed upon, it is reported. The revised specifications are being processed and will be distributed as soon as possible.

Those present representing telephone equipment manufacturers and suppliers were:

K. W. Graybill, chief engineer, and D. H. Deaver, assistant to the president, Automatic Electric Sales Corp.

H. B. Boswau, chief engineer, Leich Electric Co., and D. C. Gibson, vice president, Leich Sales Corp.

J. G. Bonner, assistant chief engineer, North Electric Mfg. Co.

T. DeWitt Talmage, assistant sales manager, and B. A. Wallace, assistant chief engineer, Kellogg Switchboard & Supply Co.

F. W. Dickerson, manager of communications equipment sales, and D. R. Edge, sales department, Graybar Electric Co.

W. P. Hollis, sales manager, and L. Denton, assistant chief engineer, Federal Telephone & Radio Corp.

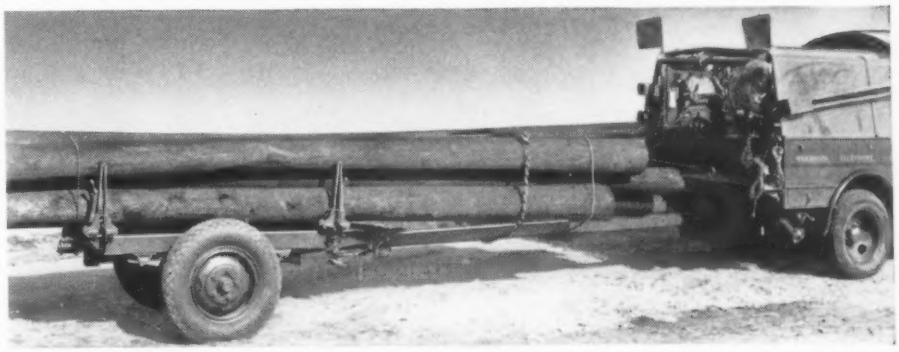
REA personnel included J. E. O'Brien, chief, Technical Standards Division; Dr. H. M. Trueblood, consultant; Warner T. Smith, assistant to the chief, Technical Standards Division; and F. H. Nolke and J. B. Eppes, Jr., engineers on the Technical Standards Division staff.

V V

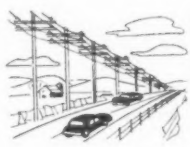
OBITUARY

JOHN RICHARD BOYD, 76, Fayetteville, N. C., district manager of the Carolina Telephone & Telegraph Co.

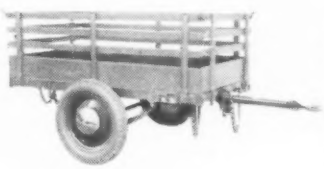
HIGHWAY POLE TRAILERS



Strength for heavy loads— Economy handling for light loads

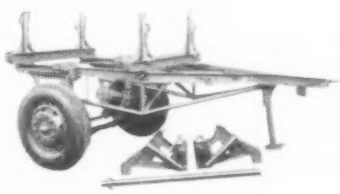


Here's one very versatile model from Highway's complete line of Utility Trailer Equipment and accessories. Its light weight means economy on average or light loads, its strength means it can carry the occasional heavy load of poles. Other hauling needs are cared for by its steel floor and optional side and end panels. Standard equipment includes a load binding winch mounted on rear cross member, a king pole binder on front cross member, and four cam lock sliding stanchions. Ask for our catalog for complete description and specifications.



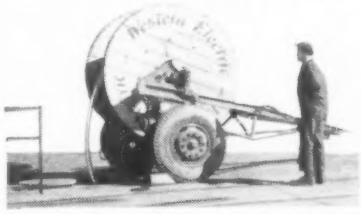
Pole and General Purpose Trailers

Light two-wheel units, sturdy in construction and especially designed for use with one-half ton trucks equipped with pick up bodies, installation or service bodies. Also hauls cross arms, insulators, wire, and pole line hardware—even brush.



Combination Pole and Cable Reel Trailer

Bolsters with sliding cam locking stanchions quickly mounted or unmounted. Cable reel saddles securely attachable at moment's notice. Handles cable as effectively as standard cable reel trailers. Quickly adjustable to different width reels.



Standard Cable Reel Trailer

For loading and transporting heavy and unwieldy reels of cable. Quick loading, with low center of gravity for safe transportation at high speeds. Saddle guides quickly adjustable to different width reels. Safety rope and attaching parts are standard equipment.

Get Our Complete Catalog

HIGHWAY TRAILER COMPANY

Headquarters: Edgerton, Wisconsin

PLANTS AT EDGERTON, WISCONSIN — STOUGHTON, WISCONSIN

CINCINNATI, OHIO

Manufacturers of Utility Truck Bodies • Earth Boring Machines • Pole and Cable Reel Trailers • Winches • Power Take-offs • Service Accessories

Here the utility's Hydrocrane sets an electric pole in an alley. The yard supervisor states, "We find the Hydrocrane the safest rig we've ever used for setting poles and transformers in among wires. With that telescoping boom and the precision hydraulic control we can ease a pole or heavy transformer right into place. It's tops for maneuverability."

"this rig unloads poles twice as fast —safer too"

SAYS UTILITY MAINTENANCE MAN

"Our Bucyrus-Erie Hydrocrane unloads and stockpiles poles ranging from 30 to 65 ft. long — does the job twice as fast as we used to with hand methods," says the yard supervisor of a Midwest electric utility. "The Hydrocrane and three men can unload two cars of 30-ft. poles in a day — it took four men two days to do the same job by hand. We used to roll the poles off the cars, often causing breakage and making it dangerous for the men. Also stockpiling the poles by hand caused creosote burns on arms and hands. With the Hydrocrane all this is eliminated."

Hydrocrane Saves Time Here Too

Setting Poles
Unloading Transformers
Setting Transformers
Unloading Steel Beams and Wire
Handling Miscellaneous Supplies

Two Sizes — 2-ton ¼ yd.; 3-ton ⅜ yd.
Send the coupon for further information.

BUCYRUS-ERIE HYDROCRANE DIVISION
South Milwaukee, Wisconsin

BUCYRUS-ERIE HYDROCRANE DIVISION
South Milwaukee, Wisconsin

71H50

Gentlemen: Tell me more about the Hydrocrane for utility work.

BUCYRUS ERIE HYDROCRANE

Name.....

Company.....

Address.....

City.....State.....

for many years until his retirement in October, 1931, died Aug. 15. A native of Concord, N. C., he became Fayetteville manager of the company in 1906 and was made district manager a few years later.

V V

Shot Fatal to Jack Corman, Vet And Telephone Accountant

Jack Corman, 29, plant accountant for the Northeastern Telephone Co., Augusta, Ky., was killed on July 31 when, without warning, he was shot in the back with a 12-gauge shotgun, by the husband of the manager of the Augusta hotel in which he resided. The tragedy took place at night in the hallway of the hotel.

Mr. Corman's assailant, who is 65 years of age, confessed to the shooting

JACK CORMAN

and is being held for wilful murder. It is alleged that he had brutally murdered another man several years ago and is reported to have attempted to kill his son a few years ago. He was freed on both charges.

Mr. Corman was born Nov. 6, 1921, in Louisville, Ky. He attended Louisville public schools and the University of Louisville.

At the outbreak of the last war he transferred to Western Kentucky State College in order to have the benefit of ROTC training, which was not available at Louisville.

After a year at Western he entered the army and was in service in the North African and Italian campaigns. He was in the outfit which established the Anzio beachhead and was there from the invasion until May 23, 1944, on which date he was seriously wounded during the drive for Rome. He spent 14 months in the hospital. Mr. Corman won a Presidential Citation for service beyond the call of duty in the Anzio campaign and was awarded the

Purple Heart because of his wounds in action.

Mr. Corman is survived by his parents, Mr. and Mrs. Dan Corman, Louisville; a sister, Mrs. George Bertram, Louisville; an uncle, Minor Corman, and a cousin, W. F. Corman, both of the Southland Telephone Co., Atmore, Ala.

V V

Independent Pioneers to Hear Purdue Glee Club Again

The Purdue Varsity Glee Club, which appeared before the 1949 annual meeting of the Independent Telephone Pioneer Association last October, has been engaged to entertain the Pioneers at their 1950 meeting, Mayme Workman, executive secretary of the association, has announced. The ITPA entertainment committee, of which R. W. Siemund, Chicago, Ill., is chairman, is making arrangements for the entertainment.

The Purdue Glee Club, which has been touring Europe and is one of the most popular musical organizations in the country, was invited to present its program at this year's meeting as a result of requests of many Pioneers who were unable to attend last year's meeting.

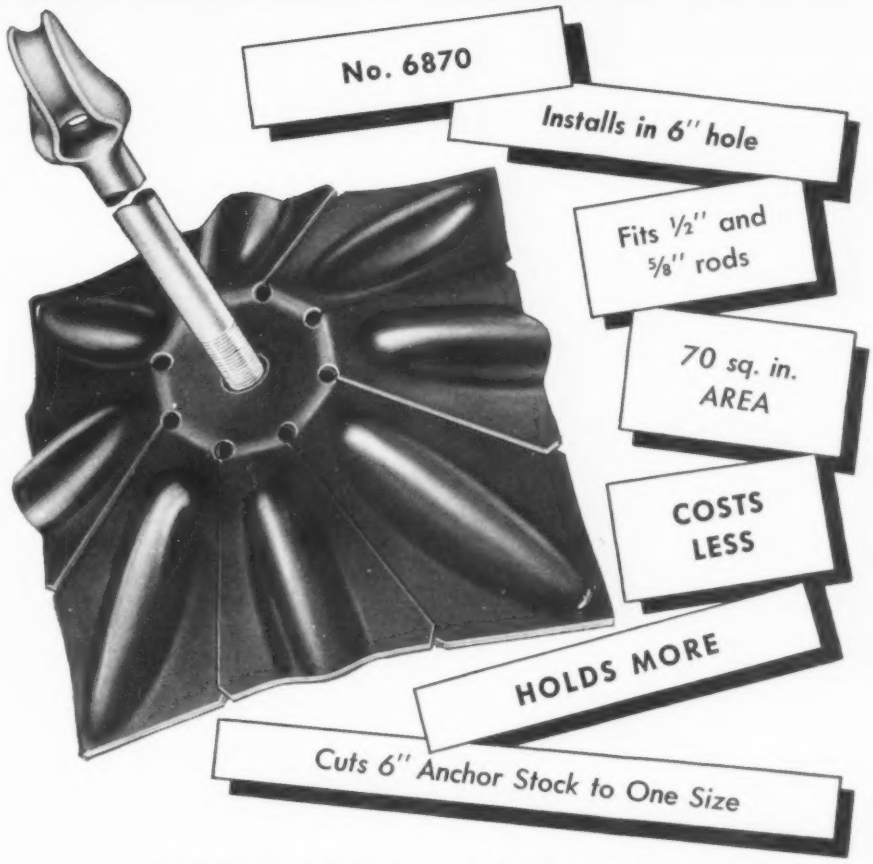
This year's Pioneer meeting will be held the afternoon of Oct. 10 during the convention of the United States Independent Telephone Association.

EXAMPLE OF GOVERNMENT EXTRAVAGANCE

Where should government money go? Defense? Housing? Education? Preservation of natural resources? These might be among the choice thoughts of several millions of taxpayers, as major and universal needs. Yet production of the current federal publications listed below, all of which are of doubtful significance to the national economy, required paying writers, printers, stenographic and clerical workers, and distributors, and may well represent a waste of federal funds:

- **"Aunt Sammy's Radio Recipes"—142 pages**
- **"Basic Fish Cookery"—26 pages**
- **"Basements vs. No Basements for Houses"—23 pages**
- **"Climate and Man"—1,248 pages**
- **"Technique of House Nailing"—53 pages**
- **"A Survey of the Recreational Resources of the Colorado River Basin"—242 pages**
- **"Review of Literature on Dusts"—333 pages**

Here's the ANCHOR for Rural Telephone Lines



CHANCE 6" 8-WAY EXPANDING ANCHOR

You can stock this six-inch 8-Way Expanding Anchor for most rural telephone line guying—save on initial costs—on installation time—and save stocking two sizes (it's designed to replace the Chance No. 62 & 64).

The 6870 sells for $1.30. It has a 70 square inch area and a rated soil-anchor holding strength of 14,000 pounds in class 4 soil (crumbly damp).

This anchor has all the fine features of the famous Chance eight-inch 8-Way. It is "streamlined" to expand quickly—no bolts to cut—holding wires shear with a single blow of the expanding bar. There is no wasted area between blades and the weight of the load is carried by eight blades instead of two or four . . . All good reasons why the Chance 8-Way is on the specs of the biggest anchor users in the telephone industry—reasons why you should specify Chance six-inch 8-Way on *your* next order.

You know it's RIGHT when you specify CHANCE

C50-18

A·B·CHANCE CO·

CENTRALIA, MISSOURI · SAN FRANCISCO, CALIFORNIA

ABC INDUSTRIES

THE PLANT MAN'S *note book*

BY RAY BLAIN TECHNICAL EDITOR

TELEVISION had 50 stations in 29 cities at the start of 1949 and 93 stations in 53 cities at the year's end. There was an increase from 1,000,000 to 3,700,000 sets in use.

Radio had an increase of some 225 stations during this period to bring the total, both standard and frequency modulation, to more than 2,800 stations. Nearly 10 million new radio sets were placed in service to bring the total in use to about 85 million.

• • •

It has been said: "The greatest mistake you can make in this life is to be continually fearing you will make one."

• • •

A new handset telephone, with amplifying equipment, permits a hard-of-hearing person to adjust the volumes to one of three levels best suited for his needs.

This special set may be used by anyone for when the handset is lifted, the switch-hook raises to normal position and provides normal volume of transmission. For amplification, the plunger of the switch-hook is lifted, rotated and adjusted to one of three stronger volumes.

• • •

A transmitter cut-out button, mounted in the desk set base, is ideal for use on an extension telephone when a stenographer is required to take notes frequently of important conversations. This arrangement does not reduce transmission and is more convenient than a monitoring set equipped with a plug and jack and a headband type receiver.

When the special telephone, equipped with a transmitter cut-out button is not being used for monitoring, it functions as a normal extension set.

• • •

It is gratifying to note that the trend toward the use of small dial telephone systems in lieu of "Squawk Boxes" of the loud speaker type for intercommunication service is definitely on the increase.

In our opinion, the small dial system not only provides better intercommunication but assures telephone privacy. The usefulness of these private dial systems is further increased by the adoption of the hanging handset type of telephone equipped with retractable cords. This arrangement eliminates the need of cluttering up desks with two telephone instruments and designates a distinctive type for intercommunication use.

• • •

A recently developed power machine, which should prove useful to telephone companies, possesses a variety of features which make possible the machine rodding of underground ducts with increased speed and economy (See cut).

This machine is designed to push, pull and rotate "Flexible" steel rods in ducts. It will work at speeds of up to 100 ft. per minute and will rod 900 ft. in one direction, from one location, it is claimed. It is especially effective for boring through dirt and debris, pulling small, lightweight cables and proving mandrels. The machine is powered with a six h.p. gasoline engine, equipped with rear reduction and twin disc clutch.

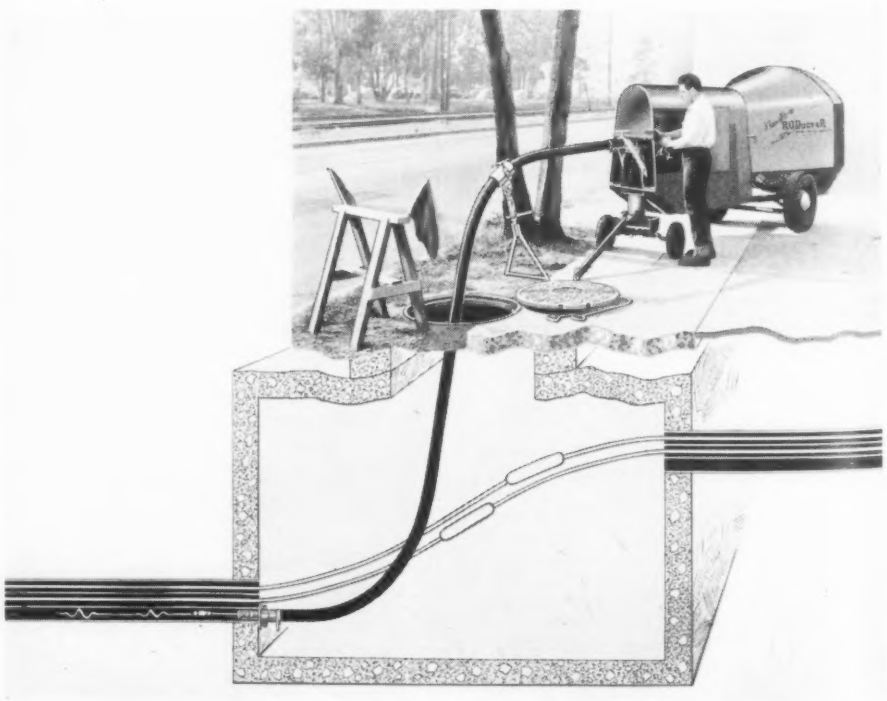
• • •

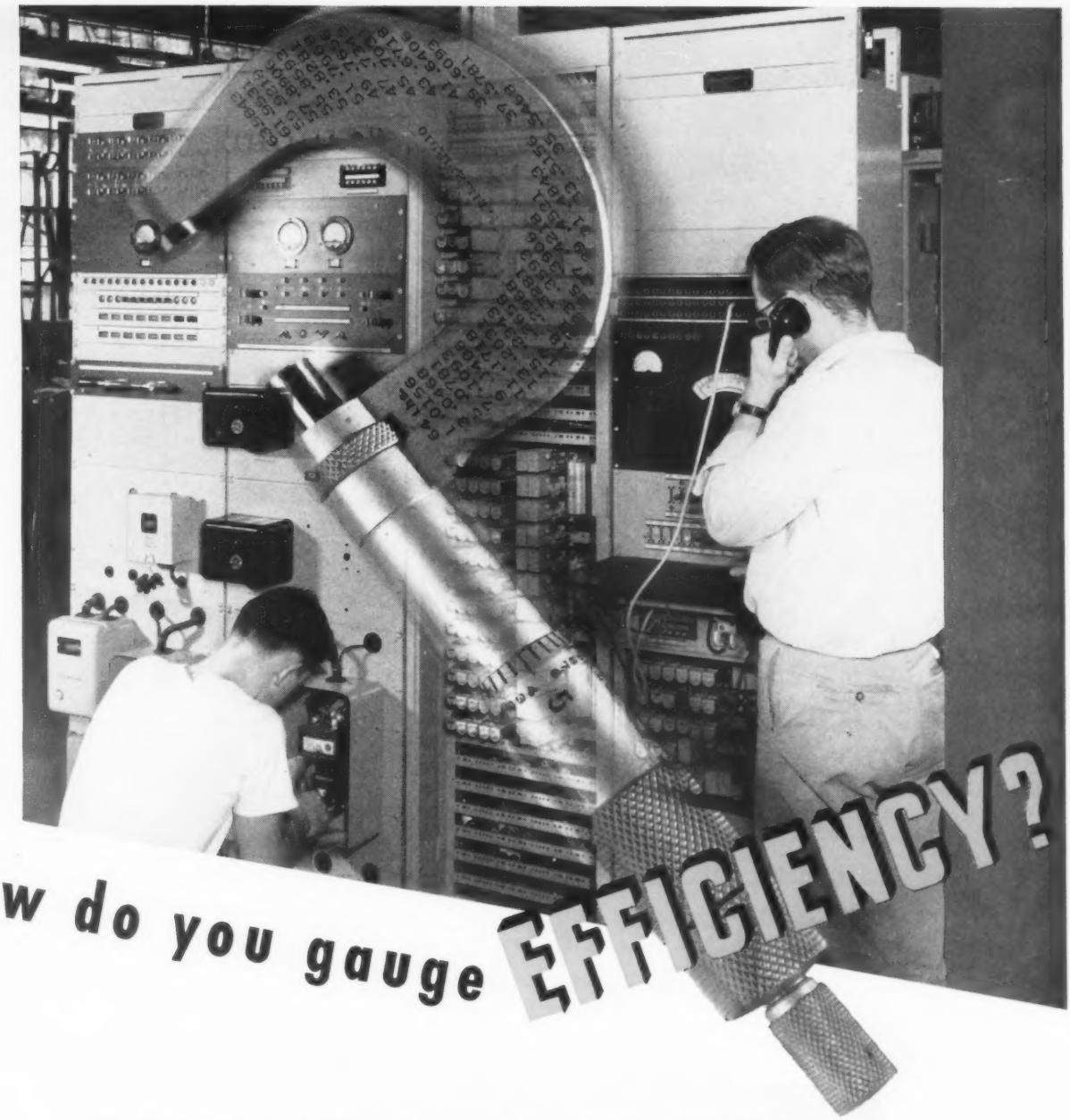
A small television camera is being used successfully to project the typed words from a page type teletypewriter so that a number of persons in a room may participate in a teletype conference. It is claimed that the same camera may also be used to advantage to explain in detail the mechanism of small parts so that a large class may be instructed properly.

This device may rightfully be classed as one of the by-products of television.

• • •

Recently, we had the pleasure of inspecting a cable splice housing which





How do you gauge EFFICIENCY?

Efficiency, in our book of definitions, means economy of motions, a measured amount of work completed in the least amount of time, with the least effort.

This primary definition is built into the operating functions of NORTH "ALL - RELAY" switching equipment to give your telephone exchange truly modern, efficient dial automatic equipment. Mechanical motion with its resultant high maintenance costs is almost non-existent. Month after month, year after year "ALL-RELAY" provides top quality service with minimum maintenance. But see it in operation yourself, then decide. The location of your nearest North installation can be had by writing or calling—

THE NORTH ELECTRIC MANUFACTURING CO., Galion, Ohio, U. S. A.

Originators of **ALL RELAY** *Systems of Automatic Switching*

may be conveniently used in lieu of a wiped sleeve to protect a cable splice.

This arrangement consists of a plastic sleeve with end fittings of the same material held in place by screw threads. Either a straight, or a two or four-way splice may be covered with this device. Rubber bushings inside the end fittings compress around the cable and provide a gas-tight connection.

It appears probable that this device may eventually replace wiped joints on some types of cable construction. In addition, this splice housing appears exceptionally well suited for use on thermoplastic jacketed cable.

PLANT MAN'S QUIZ

Q. We are experiencing excessive trouble on station protectors which was caused by a considerable number of fuses being blown during electrical storms. Our cable terminals are all of the protected type and each open wire is equipped with crossarm arrestors a few spans from the cable terminal. The fuses blow frequently at the terminals and also at the subscriber's station protectors. The carbons are seldom burned or damaged in any manner. Can you recommend a better and less costly means of protection against lightning?

A. There are several possible causes for the type of trouble you are having. Protector blocks, used to protect telephone equipment, generally have a gap of 0.003 to 0.004-inch with a breakdown of 350 to 500 volts peak. Adequate protection for cables is usually obtained with a gap of approximately 0.006-inch with a breakdown of about 700 volts peak.

Fuses are placed in the line ahead of protector blocks to limit the current which may result from accidental contact between power and communication conductors. These fuses usually have a five to seven ampere rating and are capable of interrupting 2,500 volts at 200 to 300 amperes.

Good grounds are most essential to the proper operation of protectors. A low resistance ground proves very effective while a high resistance ground contact may make line protectors practically worthless.

A common practice is to make use of water pipes for telephone ground connections. When the city water mains are used for a ground, they usually prove effective, but this may not be true when a ground is made on a private water system. When a private system receives its supply from a drilled well with a metallic casing extended deep into the earth, a low resistance ground is usually obtained.

On the other hand, when the private water supply is obtained from shallow-dug wells or cisterns with only a relatively short length of pipe in contact with the earth, a high resistance ground may result. A ground on a messenger strand may also have an extremely high resistance.

The use of the crossarm arrestor is a very good practice and this should reduce the discharge block burns and open fuses that are the result of lightning. In general, these crossarm arrestors should be installed 500 to 600 ft. from the telephone they are to protect.

If the power and telephone are both connected to a private water system, there is a probability that the blown

A NEW PLASTIC JACKETED CABLE

Offers greatest possible economy through longer life in all types of service. Has maximum flexibility combined with extreme toughness. Highly resistant to abrasion, moisture, acids, cleaning fluids, etc.

This New LENZ product can be used aerially or in ducts. A test cable buried twelve years in the soil still maintained its characteristic properties. Jacket strips easily and cleanly. Individual conductors can be furnished with plastic cotton serve or all textile insulation. Write today for complete information on this latest development that means vital savings in time and money—for you.

LENZ ELECTRIC MANUFACTURING CO.

1751 N. WESTERN AVE., CHICAGO 47, ILL.

"IN BUSINESS SINCE 1904"

DISTRIBUTOR
Leich Sales Corporation
427 W. Randolph St., Chicago 6

DISTRIBUTOR
H. H. Van Luven
537 Ceres Ave., Los Angeles 13

fuses are caused by excessive potentials that are impressed on the power service. This would not occur in built-up areas where water is supplied from large metallic mains. These systems usually have such a low resistance to ground that they cannot be raised to an excessive potential by any current likely to be introduced by way of the secondary neutral at times of fault involving the latter. It is suggested that you consider the following possible remedies for the trouble you are experiencing:

(1) Make certain that your protectors' grounds are of low resistance. If telephone and power services are both grounded on a private water system, try installing a ground rod with adequate separation from the power ground.

(2) If you are using five-ampere fuses, try replacing some of them with seven-amperes and check the result after the next lightning storm.

(3) If neither of the above remedies proves effective, try installing a smaller gap discharger on a few stations for test.

While it is highly desirable to have a discharger that will be self-cleaning and will not place a permanent ground on the line, it should not cause a fuse to blow except on a direct power cross or a heavy lightning discharge.

• • •

Q. What type of twine should be used to bind frayed switchboard cords?

A. We would not recommend this type of cord repair. If cords are frayed near the plugs, they should be rebutted. When rebutting will not correct the frayed condition, the cord should be replaced with a new one.

• • •

Q. Will it be necessary to use enameled wire on the installation of a manual multiple type switchboard?

A. Under general conditions, enameled wire will not be necessary, and tinned, textile-insulated will prove satisfactory. Admittedly, the enameled wire is better insulated: however, it makes soldering rather difficult.

• • •

Q. How many stations can be accommodated with a wiring plan to provide intercommunication?

A. One manufacturer informs us that their equipment will accommodate 10 or 20 stations. The 20-station system can be equipped with six trunks to a common battery manual or dial exchange and two intercommunication circuits.

The 10-station system may be equipped with six, three or two main exchange trunks and one or two intercommunication trunks.

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Cable Splicing

(Continued from page 20)

sections toward the bridge. Likewise, 26.85 ohms times 19.5 pair ft. per ohm of 24 gauge, or 26.85 times 19.5, equals 523.5 ft. from the 22 and 24-gauge junction to the fault. This method may be used regardless of the sequence and gauge in which the different sections of cable may be arranged, the only requirement being that the clear and faulty wires are of the same gauges and lengths. In this case, *Fig. 10* will apply, giving the X value from which the fault location in feet may be determined from the distant end of the cable toward the bridge.

When a clear wire of a different gauge than the faulty wire must be used, the method and formula shown in *Fig. 7* will apply. When two or more gauges are involved, the formula will provide an X value from which the distance of the fault in feet from the bridge may be calculated. The X value in this case represents the resistance of a single wire (not pair feet) from the bridge to the fault. Therefore, if the X value is greater than the calculated resistance of one wire from the bridge to the end of that wire, then the fault will be found beyond this first section from the bridge. The location of the fault may be determined in the same manner as described in *Fig. 10* except that all the calculations are based on feet of single wire from the bridge.

The Murray loop method will prove best suited for locating cable faults in short lengths of cable. Consequently it may be used to advantage when an exact fault location is essential to determine, i.e., where excavations must be made for making the necessary repairs in buried or underground cables.

To eliminate errors because of the effects of temperature on the wire as well as any slight variation of the feet per ohm, a preliminary test *(Fig. 11)* should be made of the clear and faulty wires to obtain the exact feet per ohm of the faulty wire used in the proceeding calculations. To illustrate:

(1). Connect wires Nos. 1, 2 and 3 together at "E."

(2). Connect wires Nos. 1 and 2 to terminals "C" and "F" of the bridge with the faulty wire on "F."

(3). Make loop test of loop formed by wires Nos. 1 and 2, as previously described for Varley test, and record loop value for use in the formula.

(4). Connect wire No. 3 to the "G" terminal of the bridge.

(5). Set switch No. 1 on ground and No. 2 on ML, or if bridge is equipped with a dial set it on Mur.

(6). Set dial "A" on 100 and dial "B" on zero.

(7). Set the "R" dials thousands, hundreds, tens and units on zero.

(8). Now obtain a balance by adjusting the "R" dials as when making a Varley location. When the galvanometer indicates a balance, the "R" value will be indicated for use in the formula.

We now have all the values required for determining the exact ohms per foot of the single 22-gauge faulty wire and the calculations. In *Fig. 11*, this is 61.167 ft. per ohm by the formula

$$X = \frac{LA}{A + R}$$

When making Murray loop locations of shorts, connect the wires under test to the bridge as shown in *Fig. 12*. Set switch No. 1 on ground, No. 2 on ML or on Mur, if the bridge is equipped with a switching dial. Make a 100 and B zero, then balance the "R" arm, which in *Fig. 12* equals 200, or the "R" value used in the formula. The resistance of the fault affects the galvanometer sensitivity and balance when used for making a Murray loop same as the Varley.

Fig. 13 illustrates Murray loop location of grounds and shows the affected wire connections to the proper bridge terminals. The bridge dial settings are the same as when locating a short. The same values were used in *Figs. 12* and *13* and they were derived from actual cable trouble where both short and ground locations were made of a moisture fault to determine the exact location for excavating in order to clear the trouble.

Fig. 14 shows a location method well adapted for making exact locations on short buried or underground cables where excavations are to be made for clearing the trouble. The two wires, G and P, may be any gauge and need not be the same gauge as the cable pair. The cable pair may also be any gauge. The wire "P" and the faulty wire must be exactly the same length. Therefore, it is usually necessary to extend the cable wire by using the same gauge conductor as the cable pair shown by EX wire *(Fig. 14)*. This is necessary in order that the distance from "C" to "C" along the cable pair be exactly the same as from "C" to "C" along wire P. The galvanometer may be located in series anywhere along wire G. A 45-volt radio B-battery, with one terminal connected to a ground rod and the other connected to a probe for probing along wire P—while seeking a balance point indication by the galvanometer — completes the equipment

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1949 RED
1950 GREEN
1951 BLUE
1952 GREY
1953 ORANGE AND YELLOW
1954 WHITE AND RED
1955 WHITE AND GREEN
1956
1953 1954 1955 1956 1947 1948 1949
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best suited for the use of this location method. The point of balance will be found directly above the fault. When a galvanometer and a battery are not available, a receiver may be substituted for the galvanometer and a cable tone for the battery.

When probing along wire P, a null or quiet spot where the tone is not heard will be found directly above the fault. A short may be located by grounding the mate wire of the pair under test and then proceeding in the same manner as when locating a ground.

The "Megger," besides having many applications for general telephone plant testing, is also useful in making resistance measurements of cable insulation, etc., where the resistance values are usually high. In moisture faults, where the resistance is too high to permit bridge or voltmeter locations and the only indication of trouble is cross-talk between pairs, it is usually possible to sectionalize the cable and, from a "Megger" test, determine the section in which the fault is located.

When this is possible, the method shown in *Fig. 15* may be used to locate the exact moisture spot. Connect a receiver and batteries in series to a faulty pair or any two wires of different pairs showing a high resistance cross, then tap the cable in the suspected area with a tool that will not injure the sheath. As the moisture fault location is approached by moving along the cable, the tapping may be heard weakly with an increase in intensity until a peak is reached at the exact spot where the fault is located. A gradual decrease in intensity beyond this point will follow.

The distance where the tapping may be heard varies from one foot to 10 ft. with different types of cable, such as those with loose or tight cores. The length of the cable section where this method may be employed is limited only to the ability of the person listening to signal the person tapping when the fault is approached and the exact trouble location is tapped. Moreover, this method may be used for locating high resistance faults in textile insulated switchboard cables.

Frequently, after making a Varley or Murray loop moisture fault location, and subsequent visual inspection of the lead sheath in the area as indicated by the test, no sheath defect can be detected. In such cases, the exact location of the fault may be determined by connecting the receiver and battery to one of the affected pairs at the central office or at a terminal and tapping the cable in the suspected area while the helper listens on the receiver. With the above procedure, a talking wire between the person listening and the person tapping may be used. A moisture fault indicated by loop location as being in a cable stub or in the splice where the stub is connected to the main cable may be tested in this manner by connecting receiver and batteries to a pair in the affected terminal and stub, then, while listening, tap the stub cable, terminal and splices in the area. In most cases, it can be definitely determined whether or not the fault lies in the terminal, stub or splice, eliminating unnecessary sheath openings.

The Varley loop "Bridge-Meg," *Fig. 16*, is an instrument capable of measuring resistances from 0 to 100 megohms. As a "Megger," it is ideal for making high resistance measurements, insulation tests, etc. Used as a bridge, it will measure resistances from 0 to 999,900 ohms. It is also arranged for making Varley loop fault locations. The Varley loop "Bridge-Meg" is equipped with a change-over switch which is a three-position dial for changing between "Bridge-Meg" or Varley, and is marked accordingly. In addition, a five-position ratio switch for selecting the proper ratio setting when the instrument is used as a bridge and is marked

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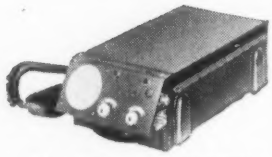

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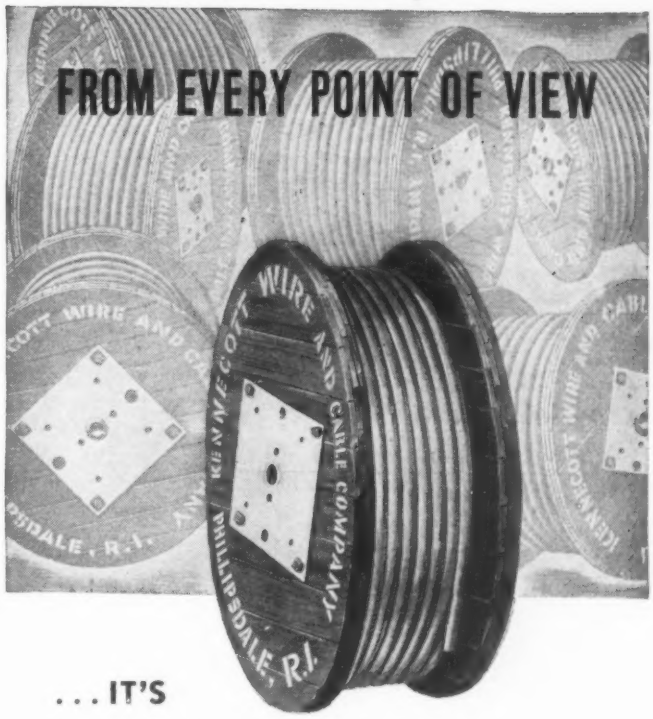

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as follows: ÷ 100, ÷ 10, X 1, X 10, X 100, making it possible to divide or multiply the values indicated on the units, tens, hundreds and thousands dials.

Fig. 16 shows a "Bridge-Meg" set up for making a ground location test on a 19-gauge cable pair. Here it was necessary to use a length of 22-gauge wire from the bridge to the cable terminals. The resistance of this wire, as in all resistance and loop measurements, must be included in the calculations which in this case amounted to .34 ohm. Referring to the calculations *(Fig. 16)* we find that .34 ohm was deducted from 8.92 ohms, the resistance of one wire from the bridge to the fault, leaving 8.58 ohms, the resistance of the 19-gauge wire from the cable terminal to the fault. Then 124 ft. per ohm of single 19-gauge wire times 8.58 ohms or 124 X 8.58 = 1,063.92 ft., the distance from cable terminal to fault. If the test lead wire had been 19-gauge instead of 22, the fault location would have been determined from the bridge terminal "E" to fault, previously explained in other loop locations methods.

If the faulty wire is made up of several lengths of different gauges, the fault locations may also be determined in the same manner as above described where all location calculations are based on the single wire resistance from the bridge to the fault.

The "Bridge-Meg" is not designed for making Murray loop locations and all Varley loop measurements must be calculated to give the distance in feet of single wire from bridge to fault. The clear wire may be any gauge or length as in the case when using a battery operated bridge. Each ratio switch setting requires a different formula as follows:

For Varley loop location measurements:

With ratio switch at X 1, then $X = \frac{L - R}{2}$

With ratio switch at ÷ 10, then $X = \frac{10L - R}{11}$

With ratio switch at ÷ 100, then $X = \frac{100L - R}{101}$

Choose the setting for each particular test which gives the greatest sensitivity.

(To Be Continued.)

CORRECTION

A typographical error appeared in the formula in the third column of page 17 of the Aug. 12 issue (Part XVI — "Cable Splicing"). The formula should have read: $X = \frac{A}{B} R = 362$ ohms.

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V V

Named Manager of Company At Noblesville, Ind.

Elgin R. Byrne, Noblesville, Ind., recently was named to the board of directors of the Home Telephone Co. of Noblesville.

Following his election he was named secretary-treasurer of the company and appointed general manager of the Noblesville office.

In announcing his election, Mr. Byrne said that he has been directed to negotiate a loan of $65,000 to be used to extend and improve telephone facilities in Noblesville and adjoining rural territory.

Mr. Byrne was elected to replace Harry H. Gardiner, Wingate, Ind., who resigned and announced that he would retire from active participation in the business.

Prior to joining the telephone company, Messrs. Byrne and Gardiner had been associated for many years in the Montgomery Light & Power Co.

New York-Chicago Radio Relay System Opens Sept. 1

Communications history will be made Sept. 1 when the Long Lines Department of the American Telephone & Telegraph Co. places in regular service its new radio relay system between New York and Chicago. Used on a stand-by basis in recent weeks, the new superhighway of communication is the first link in a relay system that will eventually span the continent.

Capable of carrying hundreds of telephone conversations and several television programs, the new system will augment existing coaxial cable routes to the midwest, strengthening one of the most important backbone routes in the nation's network of communications.

Built at a cost of approximately $12,000,000, the new route is the longest chain of radio relay stations in the world. Video signals or telephone messages span the 838-mile route in a series of 34 hops of about 25 miles each, all quicker than the blink of an eye. En route, the system also provides additional service to such intermediate points as Pittsburgh, Johnstown, Pa., Cleveland and Toledo, Ohio.

When the radio relay system has been extended from coast to coast, it will provide another large capacity route along which any type of communications can be flashed across the nation. Construction is now completed and exhaustive tests are being made on the relay system from Chicago to Omaha. This 458-mile leg will be ready for service Sept. 30.

Construction of the Omaha-Denver section got under way last April and installation of the complex microwave relay equipment is to begin soon. Tests for relay paths between Denver and the coast are now finished and construction of the relay stations across the Rockies and Sierra Nevadas and coastal section will be available late next year, according to the latest estimates of the Bell engineers.

Microwaves behave much like light waves in that they are effective only to the horizon. For this reason the stations are built within line-of-sight of each other. The radio relay stations between New York and Chicago are from 60 to 200 ft. in height depending on the terrain. Generally, in hilly or mountainous areas the smaller stations can handle the job because they take advantage of the natural elevation. Taller structures are usually needed to get the necessary line-of-sight in flat or gently rolling countryside.

At New York, the picture-carrying signals are flashed from a 10-ft. square antenna atop the Long Lines building to the first relay station in New Jersey. The microwave antenna shoots the radio energy in a very narrow line similar to the beam of a searchlight. The Chicago terminal is on the roof of the long distance telephone center at 85 W. Congress St. The next nearest tower to Chicago is at Chicago Heights, Ill.

The invisible radio beam, obtained by the use of a highly efficient metal lens, enables telephone engineers to project the signal with a transmitter power of only one-half watt, about the same power needed to operate a small flashlight. If the special lens were not used, it would take a transmitter of 25,000,000 watts to produce a signal of the same strength at the receiving antenna of the next station.

The microwave signals flow through wave guides (hollow rectangular pipes) to the radio amplifying equipment where they are boosted back to original strength and shot out through another lens-equipped antenna to the next station. When radio relay channels are used for telephone messages, additional equipment is provided at the terminals to screen out the hundreds of telephone conversations, each of which rides the microwaves at a different frequency.

V V

Onan Issues New Standby Folder

"When Power's Off—You're Safe" is the title of a new folder recently issued by D. W. Onan & Sons., Inc., Minneapolis, Minn., manufacturers of electric generating plants.

The folder tells how any business, factory or institution, can be protected against property damage, production losses and danger to human life which are the frequent results of electric power failures.

A full page of illustrations shows a number of institutions and business establishments which are protected 24 hours a day with Onan standby installations. One illustration features the Middle States Telephone Co. at Savannah, Ill.

For full particulars, write for standby folder, A-277.

V V

"Schushe me, shir," apologized the drunk, bowing to a lamp post into which he had bumped. Starting again, he collided with a fire hydrant. More apologies. On trying a third time he walked headlong into a telephone post, which set him flat. "Well," he said, "gyesh I'll jest sit down here till thish crowd gits by."

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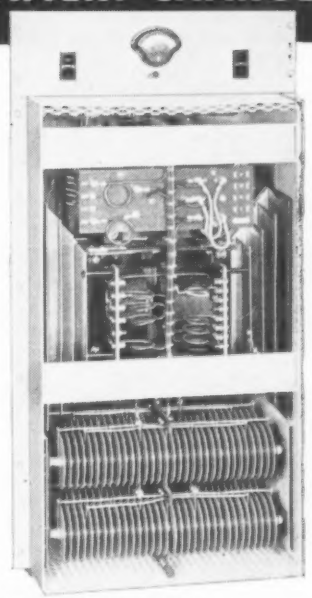

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*300D	1Ø	12 amp. 24V.
		6 amp. 50V.
75B	1Ø	1.5 amp. 50V.
150B	1Ø	3 amp. 50V.
300B	1Ø	6 amp. 50V.
600B	1Ø	12 amp. 50V.
1200B	1Ø	24 amp. 50V.
1250B	3Ø	25 amp. 50V.
2500B	3Ø	50 amp. 50V.
3750B	3Ø	75 amp. 50V.
5000B	3Ø	100 amp. 50V.
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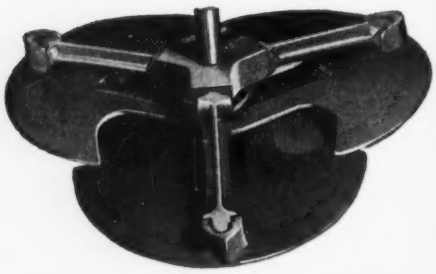

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Supervisory personnel of the central and eastern areas of the General Telephone Directory Co. at the recent five-day sales conference held in Lafayette, Ind.

Battery Group Announces Change in Name

Gould-National Batteries, Inc., became the new name of the National Battery Co. on Aug. 1 when the stockholders of the latter firm approved the change proposed by the board of directors.

The same sales and field engineering organizations, which have been serving heavy industry, mining, railroads and telephone companies under the name of the Gould Storage Battery Corp., will now operate under the new name of Gould-National Batteries, Inc. Sales and field engineering headquarters for this group will continue to be located in Trenton, N. J.

National Battery Co. entered the industrial storage battery field through the purchase of the Gould Storage Battery Co., which was founded in 1898. The position of National in the industrial battery field was materially strengthened by the purchase, in June, 1947, of the equipment and industrial battery business of Philco Corp., with a plant located in Trenton.

It has been announced that M. W. Heinritz, formerly vice president of Gould Storage Battery Corp., has been elected vice president in charge of industrial sales of Gould-National Batteries, Inc.

V V

Whitney Blake Names Taylor Assistant Sales Manager

John Brown Cook, president, Whitney Blake Co., New Haven, Conn., announces the appointment of J. M. Taylor, West Hartford, Conn., as assistant sales manager.

Whitney Blake manufactures telephone and other communications wires, Dynaprene flexible cords, cord sets and wire specialties.

Until recently, Mr. Taylor has been a New England representative of Collyer Insulated Wire Co., Pawtucket, R. I., prior to which he was with Abbott Ball Co., West Hartford. Previous experience with General Cable Corp., Anaconda Wire & Cable Co., and Collyer has provided Mr. Taylor with broad experience in the wire industry.

J. M. TAYLOR

V V

>> As if the Texas directory production people didn't have troubles enough already, a prize suggestion has come from Corpus Christi, Tex. A newspaper columnist, taking up a local citizen's proposal, advocates that Corpus Christi adopt the old custom of a noontime nap and that those in favor organize a siesta club. To insure that members would not be disturbed by telephone calls while snoozing, the nap boosters want the telephone company to print an "s" in the directory beside the name of each siesta addict.